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# CARLETON UNIVERSITY

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OTTAWA • CANADA

Undergraduate Calendar 1986 • 87



# CARLETON UNIVERSITY

Carleton University  
Colonel By Drive  
Ottawa, Canada K1S 5B6  
Telephone 613 564-4321

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This Calendar is published several months in advance of the beginning of the academic year. The University reserves the right to make whatever changes may be required, including alteration of the various fee schedules and cancellation of particular courses.



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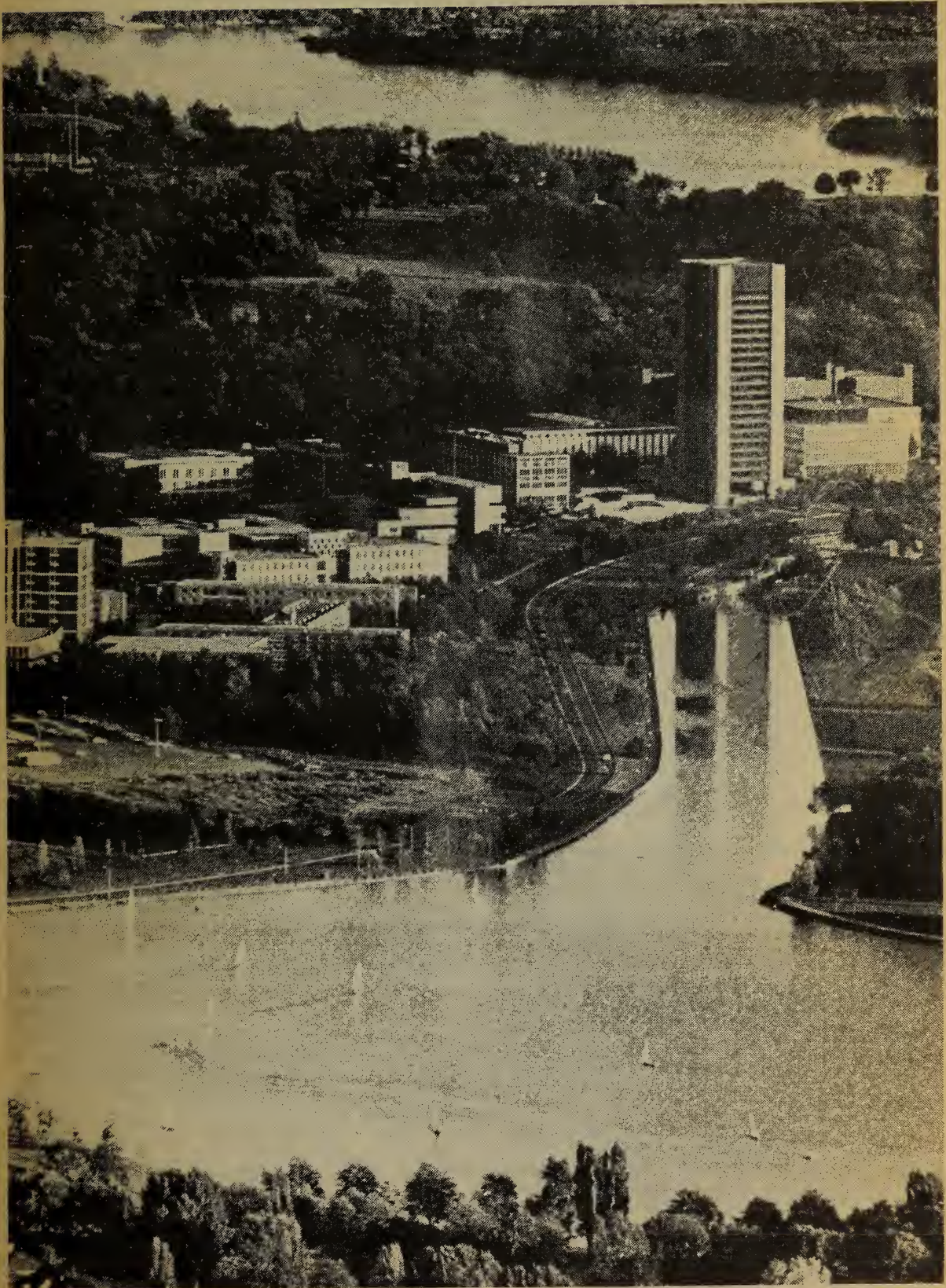
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This is Carleton University







Carleton University is a university old enough to have an established reputation, yet young enough to combine its tradition with innovation in ways to meet the diverse needs of modern students.

Carleton began in 1942 as a non-sectarian part-time college to meet the needs of the many men and women who came to Ottawa to serve the country's war effort. Since that time, it has grown and matured and now takes its place proudly as one of Canada's leading, medium-sized universities.

The first "campus" was a few rented classrooms in a high school. Full-time programs were offered for the first time in 1945, and Carleton moved to its own building in downtown Ottawa the following year.

Carleton's continued growth led to another move in 1959 to its present site — a picturesque 62-hectare campus, which now has 25 buildings, located between the Rideau River and the historic Rideau Canal. The canal, always popular for boating in the summertime, has gained great wintertime fame in recent years as the world's longest skating rink. One end of that rink is at Carleton's front door; the other end, eight kilometres away, is at the National Arts Centre — a short walk from Parliament Hill.

The Parliament Buildings and the National Arts Centre are just two of the many community resources available to Carleton's students, thanks largely to the University's location in the nation's capital. Museums, art galleries, libraries, embassies and many government departments, national associations and organizations willingly open their doors. The Ottawa area has cultural and recreational facilities to suit every taste, and a large number of information and entertainment programs in both English and French.

More than 16,000 full- and part-time students attend Carleton and study with more than 600 full-time faculty members as well as many part-time instructors.

The Faculties of Arts, Science, Social Sciences, Engineering and the School of Computer Science offer programs in architecture, arts, commerce, computer science, engineering, industrial design, journalism, music, public administration and science that lead to bachelor's degrees. Certificates are offered in public service studies, teaching English as a second language, law enforcement studies, English language and composition, and French language studies, and there is an undergraduate diploma in music. Courses in English as a second language and a variety of other services are available through the Centre for Applied Language Studies.

The Faculty of Graduate Studies and Research offers 34 master's degree programs in arts, business, computer science, engineering, journalism, science and social work, and 14 doctoral degree programs in arts, engineering and science. In public administration there is a graduate diploma.

The academic reputation Carleton has established in these areas is complemented by exciting interdisciplinary programs, among them Canadian studies, computer science, criminology and criminal justice, film studies, integrated science studies, international affairs, mass communication, public administration, public policy and management, and Soviet and East European studies. Courses in several disciplines are devoted to women's studies from both historical and current perspectives, to fine arts and to labour studies and medieval studies. Similarly, courses in several disciplines are devoted to African, Asian and urban studies.

The School of Continuing Education carries on Carleton's tradition of serving students who wish to study on a part-time basis. A wide range of opportunities exists for those who wish to qualify for degree studies, to upgrade professional skills or simply to study for the pleasure of it. Free tuition for senior citizens encourages persons 60 years of age or older to work toward degrees or to take credit courses for the joy of learning.

"Challenge for Credit" allows older students admitted to Carleton to receive credit in some undergraduate courses based on their personal and work experience outside the University.

The School of Continuing Education, through its Distance Education program, reaches out to the community by taking courses to the students. Courses are offered each year at several off-campus locations in the greater Ottawa area. In addition, Carleton's Instructional Television program brings courses to the homes of area residents through cable television.

The focus of learning, as at any university, is its library. The MacOdrum Library houses more than a million volumes and almost half a million other items that include an increasing collection of microfilms, archival material, maps, aerial photographs, slides, government documents and prints. Reading rooms housing books and periodicals of specialized interest are maintained by many departments around the campus.

A broad spectrum of recreational, cultural and leisure-time opportunities is open to members of the Carleton community. The multipurpose University Centre has a coffee house, a pub and a games room. The athletics complex provides facilities for physical recreation in a wide range of activities from individual fitness programs to intercollegiate team competition in a number of sports. Accommodation for more than 1,300 students is provided in Carleton's five residence buildings. Many individual departments offer lively and varied programs of activities. Special-interest clubs, public lectures, concerts, films, live theatre, conferences and conventions bring added depth and new dimensions to life at Carleton.

This is just a glimpse of Carleton University, its programs and facilities. The University welcomes enquiries and encourages potential students, their parents and the general public to visit the campus. The offices listed below will be happy to answer any specific enquiries.

*Admission and Application for Undergraduate Programs*  
The Office of Admissions  
Room 315, Administration Building  
Carleton University  
Ottawa, Ontario K1S 5B6  
(613) 564-3730

*Admission and Application for Graduate Programs*  
Faculty of Graduate Studies and Research  
Room 1512, Arts Tower  
Carleton University  
Ottawa, Ontario K1S 5B6  
(613) 564-4403

*Part-Time Studies*  
The School of Continuing Education  
Room 302, Administration Building  
Carleton University  
Ottawa, Ontario K1S 5B6  
(613) 564-6660

## Introducing Carleton 8

### *Scholarships, Awards and Bursaries*

The Awards Office

Room 202, Administration Building

Carleton University

Ottawa, Ontario K1S 5B6

(613) 564-3735

### *General Information on Undergraduate Academic Programs*

The Student Liaison Office

Room 315, Administration Building

Carleton University

Ottawa, Ontario K1S 5B6

(613) 564-2738

Carleton University, a founding member of the Council of Ontario Universities, enjoys full accreditation by the Ministry of Colleges and Universities of the Province of Ontario.

The University is a charter member of the Association of Universities and Colleges of Canada. It is a member of the Association of Commonwealth Universities and participates fully in the Commonwealth Scholarship and Fellowship Plan. It is also a member of the International Association of Universities.

The baccalaureate degree programs in Computer Systems, Civil, Electrical and Mechanical Engineering are accredited by the Canadian Accreditation Board of the Canadian Council of Professional Engineers.

The School of Architecture program is recognized by the Association of Architects in each Canadian province, by the National Certification Board, the Royal Architectural Institute of Canada, the Royal Institute of British Architects, and the Commonwealth Association of Architects.

The School of Industrial Design was established at Carleton on the recommendation of a study prepared by the Association of Canadian Industrial Designers. Initial funding for the school was supplied by Design Canada, Ministry of Industry, Trade and Commerce.

Carleton University participates in the Ontario Student Assistance Program, other provincial assistance programs and the Canada Student Loans Program and is fully recognized as one of the few participating institutions outside the province of Quebec for bursary assistance through the Quebec Loans and Bursaries Program.

Carleton University is recognized by the United States for the Federal Guaranteed Student Loans Program and for student aid to veterans through the Veterans Administration.



# Carleton Glossary

The following are some terms frequently used throughout this Calendar, together with a brief explanation of their general meaning. *These definitions do not provide the official, complete definition of the terms as they are applied to the interpretation or administration of University regulations and programs, and must not be so construed.*

## **Auditing**

With the permission of an instructor, students may register in courses as auditors. Auditors receive no grade and no credit for courses audited. (See p. 40.)

## **Bachelor's Degree (Baccalaureate)**

The first university degree, for which a student follows an undergraduate degree program, (e.g. B.A. — Bachelor of Arts).

## **Bursary**

A monetary award based on good academic standing and financial need.

## **Calendar**

A university publication listing courses, degree requirements, faculty and university regulations, and faculty members.

## **Continuing Education Course**

A non-credit course offered through the School of Continuing Education's Non-Credit Division. Continuing Education courses carry no credit towards a university degree program and are not provincially funded.

## **Continuing Education Student**

A student enrolled for non-credit courses and/or workshops offered through the School of Continuing Education.

## **Credit**

The full-course credit is the basic unit of academic work. It is indicated with a value of 1.0 on all records documents. A course marked ★ is a half-credit course (value 0.5). Other courses may have values of 1.5 or 2.0 and are so indicated in this Calendar.

## **Dean**

The academic head of a faculty.

## **Discipline**

The university equivalent of a "subject" in high school.

## **Faculty**

(a) A major teaching division of the University, divided into departments, schools or other units and headed by a dean. (e.g. Faculty of Arts);  
(b) The academic teaching staff of the University.

## **Honours Degree Program**

A specialized university program, normally four years or 20 full-course credits or their equivalent in length to achieve the degree.

## **Humanities**

Disciplines offered within the Faculty of Arts such as literature, philosophy, languages.

## **Major**

A discipline in which a student specializes.

## **Major Degree Program**

A university program, normally three years or 15 full-

course credits or their equivalent in length to achieve the degree.

## **Mature Matriculant**

A person who lacks normal entrance requirements as published in the calendar, but who is 21 years of age or over by December 31 of the year in which he or she wishes to enrol, may receive consideration for admission to a degree program either on a full-time or part-time basis.

## **Ombudsman**

A person who deals with individuals' grievances, complaints, requests for information.

## **Part-Time Student**

A student formally admitted to an undergraduate degree program who (a) for the Faculties of Arts, Social Sciences or Science, is taking a maximum of two full-course credits or their equivalent during any academic session; or (b) for the Faculty of Engineering, is taking a program that has the approval of the Faculty.

## **Prerequisite(s)**

A course or courses that must be completed before the student can enter the course described. In most cases, for example, the student must have taken a 100-level course in a particular discipline before being admitted to a course in the same discipline at the 200 or 300 level. The 100-level course is, therefore, a prerequisite.

## **Program**

A combination of courses over a specific area or discipline, which fulfils requirements for a degree.

## **Program Year**

Progress through degree studies is normally measured in terms of program years. The program year represents the accumulation of the number of credits normally taken in a Fall/Winter session of full-time study in the program in question. In addition, in some jurisdictions, program year implies the accumulation of a certain pattern of credits.

## **Registration**

The process of selecting and enrolling in courses for an academic session.

## **Scholarship**

A monetary award based on academic achievement.

## **Social Sciences**

Disciplines offered within the Faculty of Social Sciences such as Economics, Political Science, Psychology.

## **Special Student**

A student not admitted to a degree program but taking degree-credit courses to qualify for admission, to improve professional or vocational qualifications, for transfer credit, or for personal interest.

## **Tuition Fees**

Fees paid for enrolment in courses.

## **Undergraduate Student**

A university student working towards a bachelor's degree.

## **Withdrawal**

The formal procedure, according to regulations laid down by the University, of withdrawing from a course or courses, or from the University. (See pp. 41, 46, 47.)

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## Undergraduate Studies

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The following schedule contains the dates prescribed by the University Senate for academic activities and for procedures of academic administration.

The academic year is divided into two sessions.

### Fall/Winter Session

The Fall/Winter session commences in September and continues until the end of the examination period in early May. The *Fall term* of the Winter session consists of the months September to December. The *Winter term* consists of the months January to May. Courses are offered during the Day and the Evening.

In order to encourage and facilitate involvement in joint programs and the undergraduate exchange agreement, all significant dates in the Fall/Winter Session have been co-ordinated with the University of Ottawa schedule.

### Summer Session

The Summer session commences in May and continues until the end of the examination period in August. The *Evening division* begins in May and continues until August while the *Day division* begins in July and continues until August. Courses offered in the first or second halves of the Evening division are designated First- or Second-term courses respectively.

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### Fall/Winter Session 1986-87

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February 1

Last day for receipt of applications for admission to a program from candidates whose documents originate outside Canada or the United States, and for candidates who are studying inside Canada on a student visa.

July 1

Last day for receipt of applications for admission to a program from mature matriculants, from those presenting post-secondary education qualifications and from those transferring from other universities in Canada or the United States.

Last day for receipt of applications for admission to a program from applicants with high school qualifications from Canada or the United States, except for candidates who are studying inside Canada on a student visa.

August 1

Last day to apply for internal degree transfers to allow for September registration without incurring a late registration fee.

August 15

Last day for receipt of applications for admission to a program from Special students applying solely on the basis of Carleton University studies.

September 1

Last day for receiving applications for degrees from potential Fall graduates.  
Last day for application for degree program transfers for Fall term of Fall/Winter session.

September 1

Statutory holiday, University closed.

September 3 - 5

Registration for Fall/Winter session, to be scheduled as announced.

September 8

Fall term classes begin.

September 19

Last day for late registration.

Last day for course and section changes for Fall/Winter and Fall-term courses.

September 30

Last day for applications for Summer-session supplemental and grade-raising examinations.

October 13

Statutory holiday, University closed.

October 18

Summer-session supplemental, deferred final and grade-raising examinations end.

November

Fall convocation for the conferring of degrees, date to be announced.

November 14

Last day for withdrawal from Fall-term courses. (For financial implications of withdrawal, see pp. 41, 46.)

December 1

Last day for receiving applications for degrees from potential Winter (February) graduates.

December 5

Last day of Fall-term classes.

Last day for handing in term assignments, subject to any earlier course deadline.

December 6 - 20

Final examinations in Fall-term courses and mid-term examinations in Fall/Winter courses may be scheduled as announced.

January 1, 1987

Last day for application for degree program transfers for Winter term of Fall/Winter session.

January 5 - 9

Registration for Fall/Winter session Winter-term courses, to be scheduled as announced.

January 5

Winter-term classes begin.

January 16

Last day for late registration.

Last day for course and section changes for Winter-term courses.

January 31

Last day for applications for Fall-term supplemental and grade-raising examinations.

February 1

Last day for receiving applications for degrees from potential Spring graduates.



February 13

Last day for partial refund of tuition fees when withdrawing from Fall/Winter courses or from full-time status. (For financial implications of withdrawal, see pp. 41, 46.)

February 23 - 27

Study period, classes suspended.

February 27

Fall-term supplemental, deferred final and grade-raising examinations end.

March 13

Last day for withdrawal from Fall/Winter and Winter-term courses. (For financial implications of withdrawal, see pp. 41, 46.)

April 10

Last day of classes for Fall/Winter and Winter-term courses.

April 13

Last day for handing in term assignments, subject to any earlier course deadline.

April 13 - 30

Final examinations may be scheduled as announced.

April 17

Statutory holiday, University closed.

June

Spring convocation for conferring of degrees, date to be announced.

June 30

Last day for applications for Fall/Winter and Winter term supplemental and grade-raising examinations.

August 4 - 14

Supplemental, deferred final and grade-raising examinations may be scheduled as announced.

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### Summer Session 1987

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March 1

Last day for receipt of applications for consideration for admission to the Summer session.

May 1

Last day for degree program transfers for the Summer session.

May 13, 14

Registration for Summer Day and Evening divisions.

May 18

Summer Evening full-session and First-term classes begin.

May 22

Last day for late registration and course changes for First-term Evening-division courses and for Evening-division full-session courses.

May 25

Statutory holiday, University closed.  
Classes missed will meet May 29.

June 16

Last day for withdrawal from First-term Evening-division courses.

June 25

Last day for First-term Evening-division. (Note: Full-session Evening-division courses resume July 2.)

Last day for handing in term assignments, subject to any earlier course deadline.

June 29

First-term Evening-division final examinations in Monday/Wednesday classes may be scheduled.

June 30

First-term Evening-division final examinations in Tuesday/Thursday classes may be scheduled.

July 1

Statutory holiday, University closed.

July 2

Registration for Summer Day division.  
Summer-session Day and Second-term Evening classes begin.

July 8

Last day for late registration and course changes for Second-term Evening-division courses and for Day-division courses.

July 20

Last day for withdrawal from Evening-division full-session courses.

July 29

Last day for withdrawal from Day-division courses and from Second-term Evening-division courses.

August 3

Civic holiday, University closed.  
Evening classes missed will meet August 7.

August 12

Last day of Summer-session classes.  
Last day for handing in term assignments, subject to any earlier course deadline.

August 13 - 15

Summer-session examinations may be scheduled as announced.

September 30

Last day for applications for Summer-session supplemental and grade-raising examinations.

October 17

Summer-session supplemental, deferred final and grade-raising examinations will be held.

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## The Organization of the University

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Carleton University has Faculties of Arts, Social Sciences, Engineering, Science, and Graduate Studies and Research. In addition there are Schools of Computer Science and Continuing Education. The School of Journalism is associated with the Faculty of Arts. The School of Business, the School of Public Administration and the Institute of Soviet and East European Studies are associated with the Faculty of Social Sciences. The Institute of Biochemistry is associated with the Faculty of Science. The Faculty of Engineering includes the School of Architecture and the School of Industrial Design.

The Faculty of Graduate Studies and Research includes the Institute of Canadian Studies, the Norman Paterson School of International Affairs, the Paterson Centre for International Programs and the School of Social Work.

The University offers programs of undergraduate study leading to bachelors' degrees in arts, journalism, public administration, commerce, music, science, computer science, engineering, architecture and industrial design; and to a certificate in public service studies, a certificate in teaching English as a second language, a certificate in English language and composition, a certificate in law enforcement studies, a certificate in French language studies and a diploma in music. The University's Faculty of Graduate Studies and Research offers programs leading to degrees in Master of Arts, Master of Journalism, Master of Science, Master of Engineering, Master of Social Work, Master of Computer Science, Master of Management Studies, and Doctor of Philosophy studies in various fields. It also offers a program leading to a Graduate Diploma in Public Administration.

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## Conduct

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Carleton University is a community of faculty, staff and students who are engaged in teaching, learning and research. Its members are part of the community at large and are governed by the law common to all persons. But membership in the academic community also entails certain rights and responsibilities. The University respects the rights of speech, assembly and dissent; it prohibits discrimination on the basis of race, ancestry, place of origin, colour, ethnic origin, national origin, creed, sex, age, marital status, family status, political affiliation or belief, sexual orientation, or any handicap that is defined as such in the Human Rights Code of Ontario; it requires tolerance and respect for the rights of others; and it promotes an environment conducive to personal and intellectual growth.

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## Purpose of the Calendar

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The Undergraduate Calendar outlines requirements for admission, information concerning registration, course load, course changes and withdrawals, examinations and graduation. Regulations governing promotion and academic standing are included in the sections of the calendar dealing with each faculty and school. A separate calendar is published by the Faculty of Graduate Studies and Research.

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## How to Use the Calendar

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All students should familiarize themselves with the contents of this Calendar and make themselves aware of regulations that apply to them, as prescribed by the University as a whole, by individual faculties, by schools, departments or other academic units. The following sections of the Calendar are most important in this regard:

1. *General Regulations*: Regulations applicable to students in all faculties and to special students (p. 27.)
2. *Faculty Sections*: There are sections for each undergraduate faculty: (a) Arts and Social Sciences (pp. 81-91), (b) Engineering (p. 271), (c) Science (p. 327). Information on general regulations for each faculty is provided first, and students should make themselves familiar with regulations governing the faculty (and school or institute where applicable) in which they are or will be registered.
3. Following the information on the Schools of Continuing Education and Computer Science, and the general faculty information, the schools, institutes and departments of the University are arranged in alphabetical order within the faculty of which they are a member. Students should make themselves familiar with the regulations of every department in which they plan to take courses, including those of faculties other than the one in which they are registered.
4. The interdisciplinary section includes: entries for African studies, Asian studies, fine arts, integrated science studies, interdisciplinary courses, labour studies, medieval studies, technology, society, environment studies, urban studies, women's studies; and information about the Centre for Applied Language Studies. A list of courses for non-majors is also included.

Please consult the index at the back of the book for guidance in finding detailed information and regulations.

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## Administration of Regulations

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Students are responsible for ensuring that the courses in which they register conform to the requirements of their academic program. The regulations published in this Calendar include the main legislation governing admission, standing and graduation for undergraduate study as approved by the Senate. Advice on more specific rules or interpretations that may affect a student's academic status is available from departmental and faculty registrars' offices.

Students have the right to appeal the application of a regulation, and should enquire about procedures at their faculty registrar's office.



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### Registrarial Services

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Registrarial services are available to students through the following offices:

#### New Applicants and Prospective Students

*The Admissions Office (Student Liaison)*  
Room 315, Administration Building  
Telephone 564-3730

#### Current Undergraduate Degree, Certificate and Diploma Students

*Faculty of Arts and Faculty of Social Sciences  
(including Business, Journalism, Music and Public Administration)*  
Room 312, Paterson Hall  
Telephone 564-6690

*Faculty of Engineering  
(including Architecture and Industrial Design)*  
Room 353, Mackenzie Building  
Telephone 564-4313

*Faculty of Science*  
Room 212, Herzberg Laboratories  
Telephone 564-6705

*School of Computer Science*  
Room 212, Herzberg Laboratories  
Telephone 564-6705

#### Special Students and Students Enrolled in Non-Credit Courses

*School of Continuing Education*  
Room 302, Administration Building  
Telephone 564-6660

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### Classification of Students

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For purposes of studying at Carleton University and for the administration of regulations governing these studies, the following student classifications are recognized.

#### Full-Time Undergraduate Student

A student who has been formally admitted to an undergraduate program and who:

1. for the Faculties of Arts, Social Sciences, and Science, and the School of Computer Science, is taking a minimum of four credits or the equivalent during the Fall/Winter session;
2. for the Faculty of Engineering, the School of Architecture and the School of Industrial Design, is following the course load as shown for each year in those programs.

#### Part-Time Undergraduate Student

A student who has been formally admitted to an undergraduate program and who:

1. for the Faculties of Arts, Social Sciences, and Science, and the School of Computer Science, is taking a maximum of two full courses or the equivalent during any academic session;
2. for the Faculty of Engineering, is taking a program that has the approval of the Faculty.

#### Special Student

A student who is registered in a degree-credit course or courses but who has not been formally admitted to an undergraduate program.

#### Continuing Education Student

A student who is registered in a "non-credit" course offered by the School of Continuing Education.

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### Distance Education

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Each year Carleton University offers a number of undergraduate degree-credit courses at locations away from the University campus.

A selection of credit courses is available during Carleton's regular terms via Instructional Television (ITV), cable channel 15/B.

For further information concerning distance education, contact the School of Continuing Education, Room 302, Administration Building, telephone (613) 564-6660.

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### Senior Citizens: Tuition Fees

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All persons 60 years of age and over as of the last day for late registration may register in degree-credit courses and have their tuition fees waived. The only charge to these students is a \$5.00 per session registration fee.

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### Other Calendars

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#### Graduate Studies and Research Calendar

*Available from:*  
Dean of Graduate Studies and Research  
Room 1512, Arts Tower  
Carleton University  
Ottawa, Canada K1S 5B6

#### Summer Session Calendar

*Available from:*  
Continuing Education  
Room 302, Administration Building  
Carleton University  
Ottawa, Ontario K1S 5B6

## Course Values

The basic unit of academic work is the *full course credit*, which is indicated with a value of 1.0 on all records documents.

A course marked ★ is a *half-course credit* and is indicated with a value of 0.5 on all records documents.

## Prefix Numbering

Each course number is prefixed by the number or numbers of the department, school or committee under whose auspices the course is offered.

04 Interdisciplinary Arts and Social Sciences

10 Interdisciplinary Humanities

11 Art History

12 Canadian Studies

13 Classical Civilization

14 Classics

15 Greek

16 Latin

17 Comparative Literature

18 English

19 Film Studies

20 French

21 English as a Second Language

22 German

24 History

26 Italian

27 Mass Communication

28 Journalism

29 Linguistics

30 Music

32 Philosophy

34 Religion

36 Russian

38 Spanish

42 Business

43 Economics

45 Geography

46 International Affairs

47 Political Science

49 Psychology

50 Public Administration

51 Law

52 Social Work

53 Sociology

54 Anthropology

55 Soviet and East European Studies

56 Sociology-Anthropology

59 Multidisciplinary Technology, Society, Environment

60 Interdisciplinary Integrated Sciences

61 Biology

63 Biochemistry

65 Chemistry

67 Geology

69 Mathematics (Majors)

70 Mathematics (Honours)

75 Physics

76 Architecture

77 Architecture

78 Architecture

79 Architecture

80 Architecture Design

82 Civil Engineering

85 Industrial Design

88 Mechanical and Aeronautical Engineering

94 Systems and Computer Engineering

95 Computer Science

97 Electronics

99 Engineering Projects

## Course Numbering Pattern

The course numbering pattern is, in general, as follows:

001-099

Courses usually taken in Qualifying University year

100-199

Courses usually taken in First year

200-299

Courses usually taken in Second year

300-399

Courses usually taken in Third year

400-499

Courses ordinarily taken in Fourth-year Engineering, Fourth- and Fifth-year Architecture, and Fourth-year (Honours) Arts, Social Sciences, Science and Computer Science.

500-599

Courses ordinarily taken by Graduate students

## Note

When the suffix number of an individual course is changed from one year to the next, the former (old) number is noted, for one year only, in parentheses next to the new number in the appropriate "Courses Offered" list

# Graduate Studies and Research

Programs of graduate study, first offered at Carleton in 1954, provide opportunities for advanced study, research and critical scholarship in a number of disciplines. Carleton's libraries, laboratories and other research facilities enable graduate students to perform scholarly work of consistently high calibre, and help to foster a spirit of independent investigation.

The location of the University in Ottawa also enables graduate students to take advantage of the research facilities connected with many national institutions and government departments.

Carleton University and the University of Ottawa have developed a number of joint programs at the graduate level. The details of these programs are given under the appropriate academic unit in the Faculty of Graduate Studies and Research annual Calendar.

Where formal joint programs do not exist, a graduate student may be permitted to follow *up to two full courses* at the University of Ottawa. Moreover, there are reciprocal arrangements worked out among departments, institutes and schools at both universities to involve students, when it is desirable, in parts of the program of research and studies at the other institution. All interested students should consult the Chairman of their department, institute or school, prior to registration, in order to obtain further information on particular departmental conditions of eligibility and procedures.

Graduate programs currently offered at Carleton are the following:

*Graduate Diploma in Public Administration (D.P.A.)*

*Master of Arts (M.A.)*

In Anthropology, Canadian Studies, Classics, Comparative Literature, Economics, English, French, Geography, German, History, International Affairs, Philosophy, Political Science, Psychology, Public Administration, Religion, Spanish, Sociology and Soviet and East European Studies.

*Master of Computer Science (M.C.S.)*

*Master of Engineering (M.Eng.)*

In Aeronautical, Civil, Electrical, Materials and Mechanical Engineering.

*Master of Journalism (M.J.)*

*Master of Management Studies (M.M.S.)*

*Master of Science (M.Sc.)*

In Biology, Chemistry, Geology, Information and Systems Science, Mathematics and Physics.

*Master of Social Work (M.S.W.)*

*Doctor of Philosophy (Ph.D.)*

In Biology, Chemistry, Economics, Engineering (Aeronautical, Civil, Electrical and Mechanical), Geology, History, Mathematics, Physics, Political Science, Psychology and Sociology.

Joint programs with the University of Ottawa are offered in the following areas: Civil Engineering, Electrical Engineering, Mechanical and Aeronautical Engineering, Biology, Chemistry, Geology, Mathematics and Statistics, Physics, and Economics. The Department of Psychology offers a joint Specialization in Neuroscience.

## Research

Graduate studies and research are closely intertwined at Carleton, as in the case of the Institute of Canadian Studies, the Institute of Soviet and East European Studies and the Norman Paterson School of International Affairs.

Of a less formal nature are the many organized research units in such fields as emergency communications, energy, entomology, jurisprudence, regional linguistics, northern and native studies, renaissance studies and multi-disciplinary studies in communications.

In addition, many interesting research projects are thriving, which are outlined in the biennial publication *Research and Studies*, available from the Graduate Studies and Research Office, Carleton University, Ottawa, Canada K1S 5B6.

## Special Students

Students interested in pursuing graduate studies at Carleton are urged to note the following University regulation: "Course work completed as a Special student is not normally acceptable for degree credit in the Faculty of Graduate Studies and Research." (See also pp. 55.)

## Graduate Studies and Research Calendar

The studies of each candidate will be directed by a department, institute, or school, and are governed by the general regulations outlined in the Graduate Studies and Research Calendar. To obtain a copy of this calendar, write to the Graduate Supervisor of the individual unit concerned, or to:

The Faculty of Graduate Studies and Research  
Carleton University  
Ottawa, Canada K1S 5B6



Directory of Academic Offices

Accounting: see Business  
Aeronautical Engineering: see Engineering  
African Studies: 911 Arts Tower, 564-4373  
Anthropology: see Sociology and Anthropology  
Applied Language Studies: 215 Paterson Hall, 564-6612  
Architecture: 306 School of Architecture, 564-6380  
Art History: 2201 Arts Tower, 564-7156  
Asian Studies: 2A54 Paterson Hall, 564-2891  
Biochemistry: 578 Tory Building, 564-2858  
Biology: 583 Tory Building, 564-3871  
Business: 901 Arts Tower, 564-4373  
Canadian Studies: 1116 Arts Tower, 564-2877  
Chemistry: 204 Steacie Building, 564-4332  
Civil Engineering: see Engineering  
Classics: 2015 Arts Tower, 564-3740  
Comparative Literature: 1726 Arts Tower, 564-2894  
Computer Science: 542 Herzberg Laboratories, 564-7545  
Criminology and Criminal Justice: B746 Loeb Building or 3A40 Paterson Hall, 564-7412  
Directed Interdisciplinary Studies: 3A46 Paterson Hall, 564-6342  
Economics: C876 Loeb Building, 564-4377  
Electronics: see Engineering  
Engineering: 353 Mackenzie Building, 564-4313  
English Language and Literature: 1812 Arts Tower, 564-3847  
English as a Second Language: 215 Paterson Hall, 564-6612  
Film Studies: 427 St. Patrick's Building, 564-6755  
Fine Arts: 2015 Arts Tower, 564-3740  
French: 1602 Arts Tower, 564-3754  
Geography: B347 Loeb Building, 564-2641  
Geology: 304 Tory Building, 564-2630  
German: 1315 Arts Tower, 564-2605  
History: 400 Paterson Hall, 564-2777  
Industrial Design: 291 Mackenzie Building, 564-5526  
Integrated Science Studies: 575 Tory Building, 564-2851  
Interdisciplinary Studies (Directed): 3A46 Paterson Hall, 564-6342  
International Affairs: 2A55 Paterson Hall, 564-2693  
Italian: 1427 Arts Tower, 564-2881  
Journalism: 346 St. Patrick's Building, 564-5530  
Labour Studies: 414 Paterson Hall, 564-6356  
Law: C473 Loeb Building, 564-7540  
Law Enforcement Studies: B746 Loeb Building or 3A40 Paterson Hall, 564-7412  
Linguistics: 249 Paterson Hall, 564-5573  
Management Studies: see Business  
Mass Communication: 310 St. Patrick's Building, 564-7432  
Mathematics and Statistics: 710 Arts Tower, 564-5500  
Mechanical and Aeronautical Engineering: see Engineering  
Medieval Studies: 2209 Arts Tower, 564-7519  
Music: A911 Loeb Building, 564-3633  
Philosophy: 2123 Arts Tower, 564-3868  
Physics: 314 Herzberg Laboratories, 564-6630  
Political Science: B640 Loeb Building, 564-2697  
Psychology: B552 Loeb Building, 564-3636  
Public Administration: 1001 Arts Tower, 564-6360  
Religion: 2116 Arts Tower, 564-3863  
Russian: 1306 Arts Tower, 564-2888  
Social Work: 469 St. Patrick's Building, 564-3677  
Sociology and Anthropology: B750 Loeb Building, 564-6650

Soviet and East European Studies: 457 Paterson Hall, 564-2711  
Spanish: 1419 Arts Tower, 564-2865  
Systems and Computing Engineering: see Engineering  
Technology, Society, Environment Studies: 229 Steacie Building, 564-5688  
Urban Studies: B457 Loeb Building, 564-2896  
Women's Studies: 1110 Arts Tower, 564-2873

Hours of Operation

**Registrar's Office:**  
**Faculty of Arts (including School of Journalism and Department of Music); and Faculty of Social Sciences (including Schools of Business and Public Administration)**

*Labour Day to April 30*  
Monday to Friday 9 a.m.-12 noon; 1-5 p.m.

*May to Labour Day*  
Monday to Friday 8:30 a.m.-12 noon; 1-4:30 p.m.

**Registrar's Office: Faculty of Engineering (including Architecture and Industrial Design)**

*Labour Day to April 30*  
Monday to Friday 9 a.m.-11:45 a.m.; 1:15-5 p.m.

*May to Labour Day*  
Monday to Friday 8:30 a.m.-11:45 a.m.; 1:15-4:30 p.m.

**Registrar's Office: Faculty of Science and School of Computer Science**

*Labour Day to April 30*  
Monday to Friday 8:30 a.m.-5 p.m.

*May to Labour Day*  
Monday to Friday 8:30 a.m.-4:30 p.m.

Office of Admissions

*Labour Day to April 30*  
Monday to Friday 9 a.m.-5 p.m.

*May to Labour Day*  
Monday to Friday 8:30 a.m.-4:30 p.m.

Continuing Education

*Labour Day to April 30*  
Monday to Friday 9 a.m.-5 p.m.

*May to Labour Day*  
Monday to Friday 8:30 a.m.-4:30 p.m.

**Evening Service, Continuing Education and Degree Programs**

Monday to Thursday 6:30-8:30 p.m.

Students registered in degree programs may receive evening counter service (general information and forms) from the Continuing Education office.

Business Office

Monday to Friday 9 a.m.-4 p.m.

**Evening Service, Business Office**

Monday and Thursday 5-7 p.m.

**Library**

*Summer Evening Session*

Monday to Thursday 8:30 a.m.-11 p.m.

Friday 8:30 a.m.-6 p.m.

Saturday 10 a.m.-5 p.m.

Sunday 1-5 p.m.

*Summer Day Session*

Monday to Thursday 8:30 a.m.-11 p.m.

Friday 8:30 a.m.-6 p.m.

Saturday 10 a.m.-10 p.m.

Sunday 1-10 p.m.

*Winter Session*

Monday to Thursday 8:30 a.m.-11 p.m.

Friday 8:30 a.m.-6 p.m.

Saturday 10 a.m.-10 p.m.

Sunday 12 noon-10 p.m.

Weekend study hours are extended before examinations. When classes are not in session, hours are reduced. The Library closes for all statutory and civic holidays except Easter Monday.

**Bookstore**

*Labour Day to April 30*

Monday to Thursday 9 a.m.-9 p.m.

Friday 9 a.m.-4:30 p.m.

Subject to seasonal adjustments.

*May to Labour Day*

Monday to Thursday 8:30 a.m.-8:30 p.m.

Friday 8:30 a.m.-4 p.m.

**Counselling**

*Labour Day to April 30*

Monday to Friday 9 a.m.-12 noon; 1-5 p.m.

*May to Labour Day*

Monday to Friday 8:30 a.m.-12 noon; 1-4:30 p.m.

**Health Services (Unicentre)**

Monday to Friday 9 a.m.-5 p.m.

*After-Hours Health Service*

(Level 2, Glengarry House)

*September to May*

5 p.m.-9 a.m. Monday to Friday

24 hours a day on weekends

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**Office Locations**

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*Admissions*

Room 315, Administration (564-3730)

*Alumni Association*

Room 512, Administration (564-3833)

*Athletics and Recreation*

Room 201, Physical Recreation Centre (564-2646)

*Awards Office*

Room 202, Administration (564-3735)

*Bookstore*

Room 403, Southam Hall (564-6616)

*Business Office*

Room 301, Administration (564-3762)

*Canada Employment Centre, Carleton University*

Room 508, University Centre (564-2600)

*Continuing Education*

Room 302, Administration (564-6660)

*Counselling*

Room 1201, Arts Tower (564-2808)

*Development Office*

Room 510, Administration (564-2800)

*General Information Desk*

Administration (564-4321)

*Health Services*

Level 6, University Centre (564-2755)

*Information Carleton*

Level 4, University Centre (564-7177)

*Information Services Office*

Room 605, Administration (564-3600)

*Medical Clinics*

Level 6, University Centre (564-2755)

Level 2, Glengarry House (564-3844)

*Overseas Students' Advisory Service*

Room 1201, Arts Tower (564-3724)

*Registrar's Office, Faculties of Arts and Social Sciences*

Room 312, Paterson Hall (564-6690), General Office

Room 320, Paterson Hall (564-7407), Counselling Office

*Registrar's Office, Faculty of Engineering (including Architecture and Industrial Design)*

Room 353, Mackenzie Building (564-4313)

*Registrar's Office, Faculty of Science and School of Computer Science*

Room 212, Herzberg Physics Laboratories (564-6705)

*Residence Information and Food Services*

Rooms 223/225, University Commons (564-6395)

*Student Liaison Office*

Room 315, Administration (564-2738)

*Students' Association*

Room 401, University Centre (564-4380)



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## Athletics and Recreation

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Physical Recreation Centre  
Telephone 564-2646

The physical recreation program has been designed to meet three general areas of interest: intercollegiate athletics, intramurals, and recreational skill instruction. Although many university students enjoy the challenge and excitement of interuniversity athletics, others frequently prefer a less demanding level of competition in Carleton's intramural program, while yet another segment of the University community desires physical expression almost completely devoid of all competition.

To meet these needs, skill-instruction classes are offered in squash, dance, yoga, fitness, ju-jitsu, karate and swimming.

The intramural program includes touch football, softball, soccer, basketball, broomball, volleyball, badminton, swimming and hockey. A few of these activities are co-educational.

Carleton's Varsity teams for men (The Ravens) participate in basketball, football, rugby, soccer, swimming, water-polo, cross-country skiing and fencing. The University is a member of the Ontario Universities Athletic Association.

The women's Varsity teams (The Robins) are members of the Ontario Women's Intercollegiate Athletic Association and participate in basketball, volleyball, swimming, cross-country skiing, fencing, field hockey and synchronized swimming.

The University's present outdoor athletic facilities include football and soccer fields as well as a skating rink and five tennis courts. The indoor facilities consist of a fifty-metre pool and ten-metre diving platform; a fitness centre with jogging track, weight training and fitness testing equipment; and a large double gymnasium with a combatives room, and nine international and four American squash courts. The facilities are made available to students either for recreational needs or for organized competition.

The athletic program at Carleton is governed by an Athletic Board, which advises the University on matters of athletics and recreation policy, through the Office of the President. The Board is comprised of members from the Faculty, Administration and the Students' Association.

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## Awards Office

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Room 202, Administration Building  
Telephone 564-3735

Medals are the major academic awards granted by the University to its superior graduating scholars. They have no monetary value.

The Awards Office is responsible for the administration of undergraduate scholarship and bursary programs and loans for graduate and undergraduate students.

Scholarships are awarded on entry to the University and to those in course on the basis of superior academic performance. Applications are not required except for the top three entrance scholarships. (See p. 411.)

Awards and prizes are awarded for excellence in particular areas of study. They may be cash awards or book prizes. No applications are required.

Bursaries are awarded to students who can show genuine evidence of financial need and who have satisfactory academic standing. Students are expected first to apply for provincial assistance. (See below.)

## Financial Aid for Students

### *Administration of Awards*

1. Students receiving scholarships and bursaries exceeding in total \$200, and which are under the jurisdiction of the University, will ordinarily be paid in two instalments, one in October and one in January. The University reserves the right to withhold the payment of the second instalment in cases where students do not meet the conditions of the award. Awards of \$200 or less will ordinarily be paid in one instalment, in October.

2. Scholarship and bursary recipients who withdraw before the completion of their year will be expected to refund their bursaries or scholarships (or a portion thereof).

## Government Aid Programs

### *Ontario Residents*

Canadian citizens or landed immigrants (permanent residents) who are residents of Ontario may qualify for assistance from the Ontario Student Assistance Program. The financial aid scheme is designed to supplement, rather than replace, family and/or student resources. In order to determine the additional funds required, the province objectively assesses the resources of the family and/or the student that could reasonably be used to provide for the student's educational costs. The assistance is in the form of an Ontario Study Grant, a Canada Student Loan and/or Ontario Student Loan. The maximum loan/grant award a student can receive in one academic year is usually the total amount of his or her allowable educational costs. The average Ontario Student Assistance issued through Carleton University in 1985-86 was \$3,700. Application forms and further information can be obtained by contacting the Awards Office at Carleton or the Student Awards Branch of the Ministry of Colleges and Universities, Mowat Block, Queen's Park, Toronto, M7A 2B4.

Students wishing to have applications processed in time for Fall registration must ensure that completed forms are submitted to the Awards Office by July 1.

### *Residents of Other Provinces/Territories Except Quebec*

Canadian citizens or landed immigrants (permanent residents) from the territories and all other provinces except Quebec may qualify for assistance from the *Canada Student Loans Plan* through their home province. The maximum loan available per academic year is currently \$3,570. The loan is interest free while the student is enrolled full-time and for six months thereafter. Some provinces also make available non-repayable grant assistance along with this federal loan.

The Awards Office disburses general information on the various provincial aid schemes but application forms and details on individual programs must be obtained from the authorities in the home province. Deadline dates vary but, generally speaking, it is wise to apply for financial assistance through the appropriate provincial department before June 30.

### *Quebec Aid*

Applications from students for assistance from the province of Quebec should be made directly to the Awards Office. Deadline date for submission of applications is

June 30. In order to be accepted by the Department of Education, all applications must be coded by the Awards Office.

#### *Part-Time Students*

Solely for purposes of federal/provincial financial aid schemes (except Quebec), part-time students are classified as those enrolled in fewer than three full-credit courses. These students are advised to contact the Awards Office for information on the availability of financial aid for part-time study.

#### **Bursaries**

Bursaries administered by Carleton University are awarded to students who have a sound academic standing and who show evidence of genuine financial need.

One application only, available in the Awards Office, is required for bursaries that are administered by Carleton.

For details of medals, scholarships, prizes, bursaries and loans see pp. 411-428.

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#### **Regular Officer Training Program (ROTP)**

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The Department of National Defence sponsors, among other programs of university education, the Regular Officer Training Program (ROTP). Training is divided into two parts: normal attendance at university during the academic year and military training each summer. A period of compulsory military service is also a condition of acceptance into the program. The plan combines university subsidization and career training as an officer in the regular component of the Canadian Armed Forces, with successful applicants being enrolled in the rank of Officer Cadet.

All tuition and other essential fees and a monthly salary to cover living expenses are paid, free medical and dental care is provided and annual leave may be granted each year.

Students are eligible to apply provided they have at least one full year remaining before graduation. Applicants must be Canadian citizens, be physically fit for enrolment in the armed forces and be at least 16 years of age on January 1 of the year they commence first-year university studies.

For further information, contact the Canadian Forces Recruiting Centre, 360 Laurier Avenue West, Ottawa, telephone (613) 992-3038.

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#### **Placement and Career Counselling: Canada Employment Centre**

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Room 508, University Centre  
Telephone 564-2600 or 996-9590

The Placement and Career Counselling Service is provided by Employment and Immigration Canada through the establishment of an on-campus Canada Employment Centre (CEC). The purpose of the service is two-fold:

1. To provide students with readily available access to employment opportunities. To this end the centre maintains job-boards listing part-time, summer and permanent employment opportunities. In addition, each year the centre arranges for a large number of representatives from government, business and industry, both local and

national, to recruit at Carleton. While the majority of these visits are for the purpose of recruiting for permanent employment, a number are arranged for undergraduates seeking summer employment. Students interested in participating in this program are advised to contact the centre upon returning to classes in the Fall, because recruiting visits commence early in October.

2. To provide students with information about and assistance in preparing for entry into the labour market. Individual and group counselling, covering such topics as career areas, labour-market trends, the job hunt and résumé preparation, is available to students seeking or preparing for employment. Students can supplement the counselling provided by reviewing materials maintained in the centre's library, as well as by contacting Counselling Services, located in Room 1201, Arts Tower.

All placement and career counselling information may be obtained by contacting the centre or referring to the *CEC Weekly Bulletin* posted throughout the University. The University papers and radio station are additional sources of information from the centre.

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#### **Student Housing and Food Services**

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##### **Residences**

Telephone 564-6395

The five residence buildings are located on campus and close to classrooms, the library, and other University facilities. The underground tunnel system makes travel to other University buildings easy in all weather. Each residence building is provided with T.V. lounges, study areas and laundry facilities. Students' rooms are equipped to meet the basic needs of students.

Full-time students of the University are eligible to apply to live in residence, with non-residents of the Ottawa region being given preference. The residence contract covers the period from September through the Spring examinations except for a short period at Christmas when the facilities are closed.

All residents must participate in the residence meal plan.

To receive a residence application form, students new to Carleton should indicate on the University application that residence is desired. Residence applications are sent to students concurrently with the offer of admission to full-time study at Carleton. Students who are currently registered at Carleton need only visit the Student Housing Office to obtain an application for residence. For further details about residence services or procedures, students should contact the Student Housing and Food Services Office.

##### **Off-Campus Housing**

Telephone 564-3612

The Off-Campus Housing Service is designed to provide assistance in finding suitable accommodation to students who cannot be accommodated or are not interested in on-campus residential housing. Listings range from rooms to private houses, giving the rates and amenities provided. This service has been set up to aid out-of-town students, but it is *not* a rental agency. Listings (not available for distribution) are posted in a glass-enclosed case in the foyer outside Room 223 of the Commons Building, and are available 24 hours a day, seven days a week. The University does not undertake to inspect or



approve any of the facilities listed by the Off-Campus Housing Section.

In addition a service called "Faculty and Staff Listing" is maintained. This lists houses of staff members going on sabbatical leave for periods ranging from six months to two years. The list is available on request.

### Food Services

Telephone 564-6395

A-la-carte food service is available at five cafeterias on campus:

*The Peppermill*, second level, Unicentre;  
*Hot Diggity's*, first level, Unicentre;  
*The Loeb Café*, first level, Loeb Building;  
*The Fit Stop*, first level, Physical Recreation Centre;  
*The Oasis*, first level, University Commons

Many vending machines are also distributed around campus for off-hour service or quick drinks and snacks.

People may eat in the Residence Dining Halls, third level, University Commons, either by purchasing one of several meal plans for the entire term or by purchasing a single-meal ticket from the Commons Service Desk. Once inside the Residence Dining Halls, the meal is self-service, all-you-can-eat. Students who purchase a meal plan are exempt from paying the seven percent provincial sales tax.

In addition, full catering services are available to provide a banquet, party trays, and bar service for groups of up to 800. We will even bake a birthday cake for you to give to a friend. To arrange for catering services, telephone 564-3710.

### Tour and Conference Centre

Telephone 564-5510

During the summer months, residences are used in a dual capacity for summer and transient students and for conference delegates. Full conference requirements (room, food services, special catering, meeting rooms, etc.) are handled by this section. Rates and details will be sent out on request.

The arrangement of special functions such as wedding receptions, banquets, parties (large and small) and special meetings come within the scope of this section. Special events may be booked throughout the year.

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### Health Services

Telephone 564-2755

Health Services is provided to protect and improve the physical and mental health of the students and of the University community. Responsibilities are to provide consultation, treatment and advice on matters of health, and to ascertain the fitness of students to perform academic work. When the necessary service cannot be provided by the program, appropriate referrals will be made. Confidentiality is respected at all times.

Health Services has regular hours and is staffed by physicians, nurses and psychiatrists.

The main clinic is on level 6 of the University Centre, open from 9 a.m. to 5 p.m. Monday to Friday. For an appointment call 564-2755.

If you become ill when the Health Services Clinic is closed, you may contact the "After Hours Service" located

in Room 226, Glengarry House. A nurse is in attendance from 5 p.m. to 9 a.m. Monday to Friday and 24 hours a day on weekends from September to May. Doctors are on call for those persons (resident and non-resident) requiring immediate attention during these hours. Beds are available for persons who require observation for a few hours or over night.

Psychiatrists are in attendance for those requiring psychiatric assessment or care. The services provided by these facilities are available to all students of the University.

The Co-ordinator for the Program for the Disabled is available to assist those persons who may require special services. Students, faculty and staff may contact the Co-ordinator for information at 564-3657 or through Health Services.

Health Services has introduced a new program to promote healthy lifestyles and wellness. On-going educational programs, activities, group and individual counselling on contraception, stress management, alcohol awareness, and weight control will be offered. Please contact the Health Educator at 564-2885 for details.

### Immunization Record

It is recommended that new students:

1. have a Tuberculin Skin Test unless they are tuberculin-positive, in which case a chest X-Ray is required; and
2. obtain from their family physician documentation of their immunization status to red measles, German measles, mumps, polio and tetanus.

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### University Counselling Services

University Counselling Services is an educational resource centre available to all members of the University community. A qualified team of counselling professionals offers the wide range of services and programs listed below.

All contacts with University Counselling Services are voluntary and strictly confidential. Information is released only upon the request and with the consent of the client involved. Other types of assistance include appropriate on- and off-campus referrals when required and consultation regarding the problems of another person.

The centre is located in Room 1201, Arts Tower, with office hours from 9 a.m. to noon and from 1 to 5 p.m. For further information about services and programs, contact the centre in person or call 564-2808.

### Counselling Services

Personal counselling can help individuals deal more effectively with emotional and social concerns. Educational and career counselling involves learning to plan wisely, handle difficulties and make decisions with regard to academic and vocational concerns. Individual and group approaches are used in providing counselling and therapy.

### Testing Service

A testing program is designed in consultation with a counsellor and constitutes an individual assessment according to the type of self-knowledge required. Relevant information generated by interest, personality, and

ability-test results is used in helping the client to determine goals and make choices.

### Information Service

A resource centre is maintained for use in educational and vocational planning. It includes materials on occupations, university and community college calendars, directories and other types of career literature. Information about other sources of assistance at Carleton and in the greater Ottawa community is also available.

### Learning Assistance Service

Group programs or individual counselling are available to students who want to develop better study strategies. Some of the areas where help is available are textbook reading, note-taking, concentration and time management problems, seminar presentations, essay writing and studying for exams.

### Campus Life Orientation

The program provides direct and indirect service to students at the University. Its main goal is to assist new students in a variety of areas (e.g. academic, social, emotional) thereby easing the transition to life at Carleton University. In addition to initial activities, services and programs are offered throughout the year.

### Foreign Student Advisory Service

Telephone 564-3724

Students from other countries can discuss any concerns pertaining to their particular situation, with the staff at the University Counselling Services. Information concerning university education, financial assistance, health coverage, immigration regulations and the general adjustment to a new living situation is available through the service. The advisory service is also a good place for students to make contacts with other foreign students.

### Group Programs

These programs afford opportunities to be involved in a variety of experiences in which learning is best facilitated through group participation. They are offered periodically throughout the year. The nature and content of programs are publicized along with dates and registration details.

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### Writing Tutorial Service

The Writing Tutorial Service offers individual tutorials to students who want advice on the writing of university essays. The tutors provide practical instruction on all aspects of the writing process from the initial research and data-gathering, to the exploration and organization of ideas, through to the final preparation of the manuscript. In addition, the service regularly presents workshops on style and minicourses on the general principles of essay writing; the timetable for such courses is posted around campus and announced in *This Week* and *The Charlatan*. The service is offered free of charge to all Carleton students, part-time and full-time, graduate and undergraduate. For an appointment or information, call 564-6749 or visit Room 215, Paterson Hall from 9:30 a.m. to 4:30 p.m., Monday to Friday.

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### Facilities for Disabled Students

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Co-ordinator for the Disabled

Room 501, Unicentre

Telephone 564-3657 (or Health Services 564-2755)

The campus of Carleton University is one of the best equipped in Canada for accommodating physically disabled persons. The buildings are in close proximity to each other and are connected by tunnels. All of the main buildings have elevators and are ramped for outside entrance and egress. Many sidewalks have been made accessible by recent curb-cut renovations. An accessible washroom for exclusive use of the disabled exists at the tunnel entrance to Paterson Hall. Keys for student use during the academic year can be obtained from the Co-ordinator.

A study room in the Library has been designated for disabled students' use. Room number 304 in the MacOdrum Library is a quiet study area and has equipment for the visually impaired. Enabling equipment includes two Visualtek, large print readers; a braille, and a computer terminal with printer and DECTALK synthesized voice components. Keys for the study area and/or for the tunnel elevator can be obtained from the Stack Supervisor at 564-7570. Inquiries about keys may also be made at the Book Return, located at the second floor entrance to the library.

Personal FM systems, and an auditorium FM sound system are now available for loan to hearing-impaired students at Carleton. Arrangement for borrowing this equipment is made through the Co-ordinator, and a refundable \$10.00 deposit is required. Students may pick up and return equipment to the Instructional Aids Department in Southam Hall in order that it can be available for both day and evening use.

### Residence Program for the Severely Disabled

A limited number of disabled students are admitted into the Carleton Residence Program For the Severely Disabled each year. Admission to the program is based upon the need for attendant care service, the availability of space in an accessible room, whether or not the applicant has housing alternatives within the Ottawa area, and the date of application. (For further information regarding application to the program, contact the Co-ordinator.)

### Accessibility and Resource Guide

A new accessibility guide for the disabled students is prepared for distribution each calendar year. For further information contact the Co-ordinator.

### Learning Disabled Students

It is the intention of faculty and staff at Carleton University to accommodate the reasonable special needs of the learning disabled student. It is recommended that the student have a psychological assessment conducted in order that University staff may best and most effectively provide services that address each individual's particular learning disability.

Students seeking help with their particular learning disability and/or information with regard to Carleton University's policy for the learning disabled may initiate inquiries with the Co-ordinator.



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**Bookstore**


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The University Bookstore, located in Southam Hall, stocks all required textbooks and offers a wide variety of reference and general books. A complete line of school supplies, imprinted software and gifts is also available.

Bookstore hours are (from Labour Day to April 30):  
Monday through Thursday, 9 a.m. to 9 p.m.  
Friday 9 a.m. to 4:30 p.m.

Hours are subject to change and will be posted at the Bookstore entrance.

Extended and summer hours are posted at the Bookstore entrance.

The Bookstore has a limited refund and exchange policy at the opening of each term and students are urged to review the policy posted in the Bookstore before buying their texts. *The Bookstore sales receipt is required for any refund or exchange.*

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**University Centre**


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The University Centre, known as the Unicentre, is the building that houses many recreational and educational services and conveniences that people may need or desire in their daily life on campus. The relaxed and informal atmosphere of the centre allows for many events of interest and discussion outside the classroom. The Students' Association, which manages the centre, encourages individuals and groups to take advantage of the services and facilities within the University Centre.

These services and facilities are: Mature Students' Centre, Peer Counselling Centre, a Public Interest Research Group, Women's Centre, Information Services, Games Area, Variety Store, Pubs, a Coffee House, Hairstylist, International Students Centre, Food Services, Health Services, Computer Terminal Room, Lounges, Canada Employment Centre, Travel Agency, Radio Station (CKCU-FM), Student Newspaper (The Charlatan), Amateur Radio Club, Photographic Club and the Offices of the Co-ordinator for the Disabled, Ombudsman, Special Projects office, and Students' Association. Rental facilities for both on and off campus groups are also provided in the University Centre.

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**Office of the Ombudsman**


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Jim Kennelly  
University Ombudsman

Room 511, University Centre  
Telephone 564-6717

The Office of the Ombudsman deals with a variety of grievances and complaints as well as with requests for information. On-campus and off-campus problems are handled by the staff (i.e. academic appeals, landlord-and-tenant problems, consumer problems, etc.). Financing of this service is provided equally by the University and the Students' Association (CUSA).

The Ombudsman's Office also publishes *Survival*, an information guide that should be helpful to all students.

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**Computing Services**


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Computing Services  
Room 401, Administration Building  
Telephone 564-5555

Carleton University offers a modern and wide range of computer services to its students. In addition to the main computing system, a Honeywell Level 66 DPS/C3 dual processor under the CP-6 operating system, there are six microcomputer networks used for instruction. As well, many departments have their own mini- and micro-computer systems applied to current research work.

The Academic Support Group of the Computing Services Department is staffed by 15 computing professionals who develop and support academic software and who offer a range of consulting services on the correct use and application of Carleton's software. They maintain standard high-level language processors for the use of computer science and programming courses in addition to specialized programs related to various statistical procedures. Comprehensive data analysis packages such as SPSS and BMDP, and the NAG mathematical library, are available for general research applications as is the SIR scientific data base management system. Several easily-used plotting programs have been developed by the Academic Support Group to facilitate the use of graphics. The Supervisor of User Services can provide information on available programs.

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**The Chaplaincy**


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T28, T30 Tory Tunnel (across from the Post Office);  
telephone 564-3646;  
Newman House, 1061 Bronson Place, Michael Peterkin,  
telephone 237-5616, Office, 127E Unicentre, 564-7585.

For over two decades a chaplaincy service has existed at Carleton. Part of our function is to share with others, experiences, insights, friendships and our faith. We are also involved in study and discussion groups, community projects, development education, marriage preparation and religious services. In addition, we have connections with many organizations and resources on campus as well as with churches and religious groups in the Ottawa area.

The two principal chaplains (Protestant-Ecumenical and Roman Catholic) are supported by a number of people in the Chaplaincy offices, which are open most days. Appointments are not necessary but at times they are advisable. People are encouraged to visit the offices at any time.

Next to the offices in the Tory Tunnel there is a Quiet Room, which is used for individual meditation, religious services, and prayer group activity. It is open all day, five days a week. In addition, Father Peterkin exercises a ministry at Newman House. The house is open to all as a drop-in centre and it accommodates smaller groups who wish to meet there.

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**Child-Care Centre**


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The Colonel By Child Care Centre has two locations on the University campus:

*Renfrew House*: for children six months to two-and-a-half years of age. Telephone 564-5521.



*Loeb Building:* for children two-and-a-half to five years of age. Telephone 564-6312.

The Centre is a parent co-operative staffed by qualified personnel.

It is open Monday to Friday from 8 a.m. to 5:45 p.m. and offers a hot lunch and two snacks.

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## Carleton University Students' Association

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Room 401, University Centre  
Telephone 564-4380

The Carleton University Students' Association (CUSA) is a separately incorporated student-run organization that promotes the interests of the student body. Every student at Carleton is a member of CUSA.

The policy body or "government" of CUSA is the 34-member Students' Council, elected annually by the student population. Representation on this body is proportional to each faculty's size, plus a president and finance commissioner elected at large.

CUSA funds and/or operates a variety of services such as the student newspaper (*The Charlatan*), an FM radio station (Radio Carleton — CKCU), a mature students' centre, International Students Centre, a labour pool, peer counselling centre, the Ombudsman's office, computer terminal room, an exam room, typing and binding service, women's centre, various publications including a Survival Guide, a student handbook and a telephone directory, an assortment of clubs and societies, alternate education programs, speakers series, and special projects office that offers academic information for all students. CUSA includes in its activities the operation of a variety store, Rooster's Coffee House, Information Carleton, the Games Room, and a pub called Oliver's.

CUSA also represents the students' interest on the political level, as a lobby group, to outline the student point of view to the administration and government departments. Students at Carleton are also members of the various federated student bodies.

The Students' Association is continually working to improve and expand its sphere of activities. To do so, CUSA welcomes student input and ideas, and individuals as well as groups are encouraged to make their feelings known to the elected members. Remember, it's your students' association.

# Alumni Association

Room 512, Administration Building  
Telephone 613-564-3833

The Carleton University Alumni Association represents the 40,000-plus graduates of Carleton University. Membership is automatically extended to all graduates, and is available, upon request, to students who have completed five full credits but are no longer registered at Carleton.

The objectives of the association are to advance the excellence and prestige of Carleton University as a distinguished institution of higher learning in Canada, and to encourage a spirit of loyalty, friendship, service and benevolence among the members.

The Alumni Association serves the University by promoting its well-being through contact with the graduates, the government, the public, the faculty, students and potential students. It is governed by the Alumni Council.

All graduates with known addresses receive the *Alumni News*, published four times a year through the Alumni Relations Office. The Alumni Office maintains alumni records to assure a meaningful and continuing dialogue between alumni and the University.

Alumni are encouraged to support the University by contributing to the Alumni Fund. Contributions to the fund help to support projects that cannot be covered by the University's budget. Funds from alumni help to support the library, student aid and other specific projects.

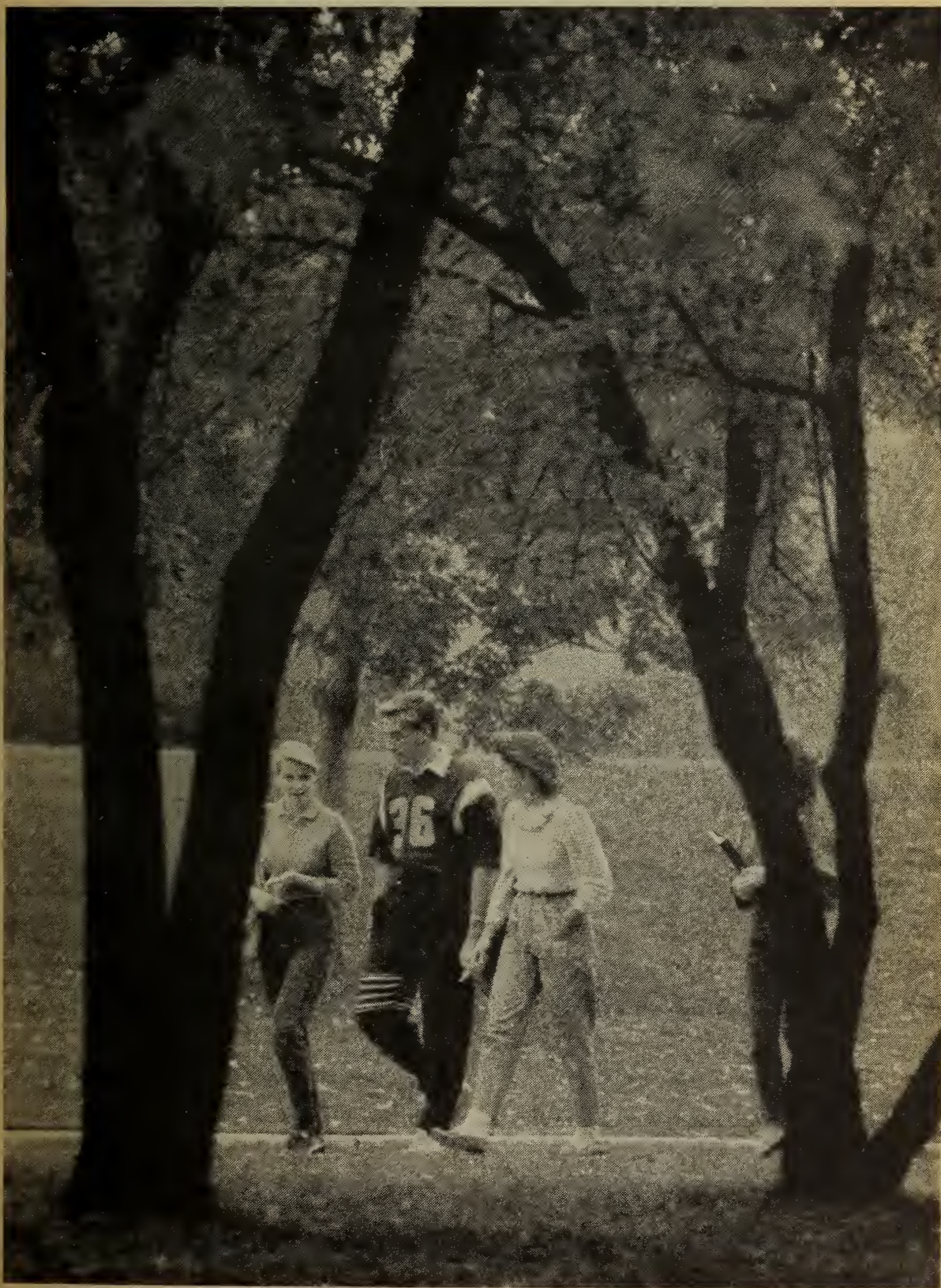
The Alumni Association sponsors reunions and an alumni award program, and assists groups who wish to organize functions for alumni. The association is a young organization and welcomes suggestions for programs and activities that would be of benefit to the University community.

## **Members of the Alumni Council for 1985-86:**

Murray Hunter, BA/72 (*President*)  
James Watson, BA/83 (*Vice-President*)  
Gail Larose, BAHons/69, MA/70 (*Secretary-Treasurer*)  
Louis Reeves, MA/74 (*Past-President*)  
Clayton Beattie, BA/51  
John Birchall, BSc/62  
Bonnie Carroll, BJ/71  
Robert Eccles, BCom/71, BAHons/72  
Patricia Finn, BA/80  
Stephen Hurst, BA/80  
Gordon Jansen, MA/79  
Dianne Larocque, BA/85  
Micheline McKay, BAHons/83  
Ted McNabb, BA/82  
Patricia Oosterbaan-Hamilton, BA/57  
Peter Pivko, BArch/78  
Jeffrey Rochon, BEng/73  
Jill Vickers, BAHons/65, Ph.D., London



# General Regulations







## General Admission Requirements

Persons wishing to follow programs of study leading to a degree, certificate or diploma must be formally admitted to the University.

Persons wishing to register in degree-credit courses without having been formally admitted to the University may do so as Special students. See pp. 33, 53.

Applicants should note that in view of limited accommodation in certain programs, holding the minimum admission requirements can only establish eligibility for selection to the University.

This publication contains admission requirements for the 1986-87 academic year only. Students wishing to apply for 1987-88 should contact the Office of Admissions for information on requirements and procedures.

Individuals who are in any doubt about their eligibility for admission are encouraged to enquire at the Office of Admissions.

In the past few years, considerable flexibility has been introduced into the admission requirements but, at the same time, essential features have been preserved. As admission requirements are subject to continuing review, the University will most certainly make additional changes in the future, but only when convinced that these changes will be in the best interests of the student.

## Multiple Undergraduate Programs

Students who already possess an undergraduate degree, certificate, or diploma from another university or from Carleton University, may apply for admission to a second undergraduate program. In such circumstances, the minimum requirement will be five additional credits, at least three of which must be in the area of specialization of the new program. For a second or subsequent undergraduate program, the appropriate residence requirement must be met (see p. 41).

## English Language Requirements

The University Senate has adopted the following statement of policy governing English language requirements for non-native speakers:

All visa applicants, including undergraduate, graduate and Special students, whose mother tongue is a language other than English, are required to present a minimum score of 550 on the *Test of English as a Foreign Language* (TOEFL) as part of the basic requirements for admission to the University.

Applicants who present a TOEFL score of less than 550 but not less than 500 may be permitted to register as Special students on the condition that they enrol concurrently in an appropriate English as a Second Language course.

Applicants who present a TOEFL score of less than 500 will only be permitted to register in non-credit English as a Second Language courses offered by the Centre for Applied Language Studies (see p. 401).

## Dates of Entry

Students may be admitted to register in May and July as well as in September. (See pp. 11-12 for details on the Academic Year.) It should be noted however, that a full range of courses is only offered during the Fall/Winter session, i.e. September to May.

## Levels of Entry

Students may be admitted to Qualifying-University, First or Upper years depending upon academic qualification. Where a student is admitted at the Qualifying-University-year level, a Major degree program is normally four years in length (i.e. Qualifying-University, First, Second, Third) and an Honours degree program is normally five years in length (i.e. Qualifying-University, First, Second, Third, Fourth). Where a student is admitted at the First-year level, the degree program is reduced by one year, i.e. normally three years for a Major degree and four years for an Honours degree. Beyond First year, remaining degree requirements are determined by the total number of credits required for that particular degree program less those credits granted on transfer from previous post-secondary study.

It should be noted that students who are being considered for admission to the Qualifying-University-year level may, at the time of admission, receive credit for work completed at that level in the Canadian high school system. This is of particular importance if a student elects a concurrent studies program or qualifies for accelerated progress (see below).

## Concurrent Studies

Concurrent studies enables local high school students to begin their university studies at the First-year level while completing their Grade 13 programs. Concurrent studies is Carleton's response to the high school credit system and recognizes the fact that many students do not proceed from Grade 13 to university in a "lock-step" fashion. The intention of this feature is to facilitate the transition from secondary to post-secondary studies, thereby extending the "continuous progress" concept that has been so well developed at the elementary and secondary levels.

Any student who has completed the Ontario Grade 12 diploma with a minimum 70 percent average in addition to one or more Level 5 (Grade 13) subjects may participate. At the time of admission, credit will be granted for those Level 5 courses graded 60 percent or better that are acceptable for the student's selected degree program. The concurrent program must then be completed in a 12-month period, at which time the requirements on admission will be adjusted to reflect the additional Level 5 work completed.

### Note:

Students must successfully complete six Level 5 courses (Ontario Secondary School Honour Graduation Diploma) in order to receive full credit for the Qualifying-University year.

## Accelerated Progress

Exceptional students who are entering Carleton's Qualifying-University year will be interested in the accelerated progress policy. This unique policy is designed to enable very capable students to proceed towards a degree at a rate commensurate with their ability in university work.

Above-average performance is rewarded with a reduction in credit requirements. For example, in an Arts or Science program, the maximum reduction possible under this policy could result in a student obtaining a degree in three years beyond Grade 12. Detailed requirements are shown in the Calendar entries for faculties.

### Qualifying-University Year

This program is roughly equivalent to Ontario Grade 13 and is offered in the Bachelor of Arts, the Bachelor of Engineering and the Bachelor of Science programs. Since all other undergraduate degree programs begin at the First-year level, students interested in these programs must first complete an appropriate Qualifying-University year program in either Arts, Engineering or Science. (See Summary on pp. 35-39.)

### Certificate and Diploma Programs

In addition to offering ten undergraduate degree programs, for which the admission requirements are stated on the following pages, Carleton offers five certificate programs and one undergraduate diploma program as follows:

#### Certificate in English Language and Composition

##### *Admission Requirements*

A university degree or teaching certificate. This is an in-service certificate intended primarily for practising teachers in order to upgrade their knowledge of those areas of language and of writing theory that underlie the Ontario guidelines and support documents.

Refer to p. 133 for program details.

#### Certificate in Public Service Studies

##### *Admission Requirements*

The Ontario Secondary School Honour Graduation Diploma (or the equivalent) with a minimum overall average of 60 percent, or Mature Matriculation (see Mature and Special Admissions, pp. 33-34).

Candidates may be admitted with advance standing, but must complete at least four credits, including all core courses, for the Certificate at Carleton University. Students who have completed an undergraduate degree are not eligible for admission to this program.

Refer to p. 236 for program details.

#### Certificate in the Teaching of English as a Second Language

##### *Admission Requirements*

Applicants are admitted on the recommendation of the Department of Linguistics. Applicants have normally completed a first degree in another discipline, or a course of study in a teacher training college. Others with a strong academic background or with experience in the teaching of English as a second language may be admitted with permission of the Department.

Refer to p. 196 for program details.

### Diploma in Music

##### *Admission Requirements*

This program is designed to attract individuals who have a strong background in performance on a musical instrument or voice, have been involved in the teaching of music, and who are desirous of obtaining additional academic qualifications.

Applicants will be admitted on the basis of an audition to be held in the Spring of each year. Although normal admission requirements are the Ontario Secondary School Honour Graduation Diploma (or the equivalent) with a minimum overall average of 60 percent, special

consideration will be extended to other applicants under Mature Matriculation regulations.

Refer to p. 206 for program details.

### Certificate in Law Enforcement Studies

##### *Admission Requirements*

The Ontario Secondary School Honour Graduation Diploma (or the equivalent) with a minimum overall average of 60 percent, or Mature Matriculation (see Mature and Special Admissions, pp. 33-34).

Candidates may be admitted with advanced standing, but must complete at least four credits, including all core courses, for the Certificate at Carleton University.

Refer to p. 195 for program details.

### Certificate in French Language Studies

##### *Admission Requirements*

1. The Ontario Secondary School Honour Graduation Diploma (or equivalent) with a minimum overall average of 60 percent, or Mature Matriculation; and
2. Facility in French to the completion of French 20.102. Candidates lacking this prerequisite will be expected to complete French 20.102 or equivalent before entering the program. Candidates already fluent in French to the level of French 20.111 or 20.112 will be required to take three credits at the 300 level. Candidates are required to take French Placement upon entry to the program.

Refer to p. 146 for program details.

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## High School Applicants

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### Ontario

The basic admission requirement is the completion of the Ontario Secondary School Graduation Diploma (Grade 12) with a minimum 70 percent average. Students who have successfully attained this level will be considered for admission to the Qualifying-University year.

To be considered for admission to the First year, which is the usual level of entry, a student must successfully complete the Ontario Secondary School Honour Graduation Diploma (Grade 13) with a minimum 60 percent average. Superior students who, through an accelerated program in high school, have partially completed Grade 13 and who are not participating in the concurrent studies program (see p. 29) will be considered for possible advanced standing at the Qualifying-University year level. A later assessment might also be possible under the accelerated progress feature. (See p. 29.)

*Detailed admission requirements for each undergraduate degree program can be found in chart form on pp. 35-39.*

Carleton University utilizes, for admission purposes, the credit system as defined by the Ministry of Education for Ontario. In calculating averages, the weighting factor assigned to a subject will be directly proportional to the credit value of that subject.

### Quebec

Students from the Province of Quebec may apply for admission to Carleton University either upon completion of the Secondary V Certificate or after completing work towards the Collegial Diploma. (See Quebec CEGEPs, p. 32.)



Students applying on the basis of high school studies will be considered for admission to the Qualifying-University year as follows:

#### *General Statement*

The Quebec Secondary V Certificate, with a minimum 70% average and including six, two-unit, college preparatory subjects at the Secondary V level.

#### *Individual Degree Program Requirements*

##### *Bachelor of Arts*

Secondary V work to include two of: English; a language other than English; mathematics (functions).

##### *Bachelor of Engineering*

Secondary V work to include: mathematics (functions); chemistry; physics.

##### *Bachelor of Science*

Secondary V work to include: mathematics (functions); two natural sciences (chemistry and physics).

Students who have completed a Grade 12 program will be considered for admission to First year.

#### **Other Canadian Provinces**

Applicants to degree programs at Carleton must normally be admissible to a university in their own province.

From the Canadian provinces and territories whose pre-university studies culminate in 12 years of schooling, graduates are considered for direct admission into First year, the normal level of entry to begin degree studies in Ontario universities after successful completion of the Ontario Secondary School Honour Graduation Diploma (Grade 13). At the present time, graduates from high schools in the following provinces are considered for admission, provided a minimum over-all average of 60% has been maintained in the final year of schooling:

Alberta and the Northwest Territories  
British Columbia and The Yukon  
Manitoba  
New Brunswick  
Newfoundland  
Nova Scotia  
Prince Edward Island  
Saskatchewan

It is recognized that the curriculum of some provinces does not include an introductory course in calculus, or that a final-year mathematics course may have only a few weeks of an introduction to calculus, or that only a few schools in a particular province or territory may offer a calculus course to a selected group of students. In instances where no calculus is presented, and there is a requirement for it in the University program to which the student is admitted, adjustments may have to be made to include Mathematics 69.007★ (Introductory Calculus) as an extra half credit beyond the normal degree program requirements.

It should be noted that for some restricted-enrolment programs, preference may be given to applicants who, along with a high academic standing, have completed an introductory course in calculus.

#### **The United States**

1. Applicants who have completed Grade 12 in the United States or in a U.S. overseas school will be considered for admission to First year. The Grade 12 program must include at least four academic units, and a

minimum of 16 academic units must have been completed in Grades 9 to 12.

2. A minimum average of *B-* is required for Pass programs and *A* for Honours programs. The applicants must be ranked in the first quarter of their class.

3. Applicants must also present a minimum of 550 on the S.A.T. Verbal and a minimum of 550 on the S.A.T. Mathematics, (or a composite score of 1100) of the Scholastic Aptitude and Achievement Tests of the College Entrance Examination Board (C.E.E.B.).

Three achievement tests are required from applicants to the Faculties of Science and Engineering and to the School of Industrial Design, these being: Mathematics and two of Biology, Chemistry or Physics for Science; Mathematics, Chemistry and Physics for Engineering and Industrial Design. The minimum score of 550 in each or a composite score of 1650 is required.

Two achievement tests are required for applicants to the Schools of Architecture and Computer Science (Hardware and Scientific Application areas of specialization). These are: Mathematics and Physics. The minimum score of 550 in each or a composite score of 1100 is required.

4. Applicants failing to meet the foregoing requirements but with otherwise a good academic record may be considered for admission to an appropriate Qualifying-University-year program.

#### **Other High School Systems**

Applicants who have completed high school diploma requirements in other than Canadian or American high school systems will be considered for admission at the appropriate level of entry. Individuals from foreign systems of education will be considered for admission to Qualifying-University year only if they are able to present sufficient evidence that their secondary school background is appropriate to this level of entry with respect to academic content and level of achievement.

Generally speaking, such applicants must meet requirements for admission to a university in their own country.

The following certificates, recognized as approximately equivalent to the Ontario Secondary School Graduation Diploma (Grade 12), may be accepted to meet admission requirements to the Qualifying-University year:

*United Kingdom, West Indies, East and West Africa, Hong Kong:* The General Certificate of Education (or equivalent) with satisfactory standing in five subjects at the Ordinary Level (or equivalent), at one sitting.

#### *Note:*

Students who achieve at a high level may qualify for a possible reduction in degree requirements. (See Accelerated Progress, p. 29.)

The following certificates, recognized as approximately equivalent to the Ontario Secondary School Honour Graduation Diploma (Grade 13), may be accepted to meet admission requirements to First year:

*United Kingdom, West Indies, East and West Africa, Hong Kong:* The General Certificate of Education (or the equivalent) with satisfactory standing in five subjects at Ordinary Level and two suitable subjects at Advanced Level, the latter completed at one sitting.

*International:* The International Baccalaureate.

## Special Requirements for Overseas Students

### *Translation of Documents*

The University must be in receipt of all official documents by July 1. Applicants from non-English speaking countries must arrange to submit certified English translations of their academic documents.

### *Financial Information*

Current immigration laws do not normally permit foreign students to seek employment in Canada to assist themselves in paying any part of their education expenses. In addition, the University has no scholarships or financial assistance plans available for incoming foreign students at the undergraduate level.

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## Transfers from Post-Secondary Institutions

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### **Residence Requirement**

In order to qualify for a Bachelor's degree, or a certificate or diploma from Carleton University, an undergraduate student must complete at Carleton University at least the equivalent of the final year of that degree program, or at least four credits for any certificate or diploma. (See p. 30.)

When a faculty of the University further specifies "core" level, and detailed departmental requirements, such as Design Project or Honours Thesis, these must also be fulfilled.

### **Other Universities**

Students applying from other recognized universities may be admitted with advanced standing if they are eligible to continue at the institution from which they wish to transfer.

An applicant who is attending or has attended institutions of post-secondary education must present:

1. *Official Certified Transcripts* of academic records mailed directly to this University by the registrars of the institutions attended;
2. In addition, applicants who have taken only one year of study past the secondary school level may be required to submit an official transcript of high school marks mailed directly to this University by the principal of the high school concerned.

Credit may be received for courses taken at other recognized degree-granting institutions if:

- (a) courses are relevant to a student's proposed program; and
- (b) the appropriate department recommends that such courses be credited to a student's program. Each application will be evaluated on its own merits.

Students who apply for admission to an undergraduate degree program who already possess an undergraduate degree from either Carleton or another university, are required to complete a minimum of one year's academic work at Carleton University as specified by the department in which the degree is to be taken in order to qualify for another undergraduate degree. (See Multiple Undergraduate Programs, p. 29.)

### **Provisional Admission**

Some transfer applicants (those who have attended only one Canadian university or Quebec CEGEP and have demonstrated better than average academic achieve-

ment) will automatically be considered for provisional admission. The provisional approval will be given prior to the completion of the student's current year, and will provide a detailed statement of the credits to be granted upon transfer. Admission will be confirmed upon presentation of a final transcript that indicates the successful completion of all courses with suitable standing.

## Ontario Colleges of Applied Arts and Technology (CAATs)

Students from Ontario Colleges of Applied Arts and Technology who present a minimum Second-Class-Honours standing will be considered for admission to the University and may receive advanced standing to a maximum of the equivalence of First year. Assessments regarding admission and advanced standing will be based on the following guidelines:

1. Applicants who have achieved an overall Second-Class standing or better, or who have Second-Class standing or better in the last two semesters in a three-year CAAT program, will be considered for admission with advanced standing to a maximum of five credits (equivalent to one year). The advanced standing would be granted according to the appropriateness of the CAAT program, the course concentration and the achievement in relevant courses.
2. Applicants who have achieved an overall Second-Class standing or better, or who have Second-Class standing or better in the last two semesters of a two-year program, will be considered for admission. While such applicants will not normally receive advanced standing, exceptional applicants can receive advanced standing on the recommendation of the appropriate academic department(s).
3. Applicants who have completed two years of a three-year program and who have achieved an overall Second-Class standing or better, or who have Second-Class standing or better in the last two semesters, will be considered for admission. While such applicants will not normally receive advanced standing, exceptional applicants can receive advanced standing on the recommendation of the appropriate academic department(s).
4. Applicants who have completed the first year of a three-year CAAT program with an overall First-Class standing will be considered for admission to First year of an appropriate University program.
5. Graduates of a two-year or a three-year CAAT program or applicants who have completed two years of a three-year CAAT program who do not meet the minimum published requirements but who are presenting *Third-Class standing* may receive special consideration on an individual basis.

Other students presenting an incomplete program normally will not be considered for admission to Carleton University on the basis of that program. Such persons may enquire about possible alternatives if they are desirous of seeking admission to a Carleton University degree program at some future date.

## Quebec CEGEPs

### *Admission Requirements*

1. A CEGEP applicant who has completed successfully 12 "General" or pre-university courses with an average of at least 65 percent will be considered for admission to First year, without advanced standing.



2. A CEGEP applicant who has completed successfully more than 12 "General" or pre-university courses with an average of at least 65 percent will be considered for admission with advanced standing based on the number of courses in excess of 12 and not to exceed the equivalent in credits of the First year of the program to which he or she was admitted.

3. A CEGEP applicant from a three-year program who has completed successfully 12 "General" or pre-university courses with an average of at least 65 percent will be considered for admission to First year. He or she may receive advanced standing for courses taken in addition to these 12 provided they correspond to those in the program to which he or she was admitted. The number of advanced standing credits will not exceed those of First year.

4. Normally, an overall average of 65 percent is required for admission to a Pass program while 70 percent is required for an Honours program. The required admission average may be greater for programs where the number of places is limited.

All applicants should note that failures in their CEGEP studies can adversely affect their admissibility.

#### *Subject Requirements*

Although specific subject requirements have been kept to a minimum, the following are considered necessary prerequisites for the degree program indicated:

*Bachelor of Architecture:* mathematics; physics.

*Bachelor of Arts:* none specified.

*Bachelor of Commerce:* mathematics.

*Bachelor of Computer Science:* mathematics; physics required for some options, recommended for all others.

*Bachelor of Engineering:* mathematics; physics; chemistry.

*Bachelor of Industrial Design:* mathematics; physics; chemistry.

*Bachelor of Journalism:* language other than English (French recommended).

*Bachelor of Music:* none specified.

*Bachelor of Public Administration:* none specified.

*Bachelor of Science:* mathematics; two experimental sciences.

program with a 60 percent average; or

(b) completed, at Carleton, one appropriate credit with a C- or higher standing, in one attempt; or

(c) other academic or work experience which, in the opinion of the admission committee, indicates a likelihood of success at university.

Only Canadian citizens and permanent residents are considered for admission as mature matriculants. Persons who have previously been involved in a university- or college-level program as full-time students are not normally eligible for consideration as mature matriculants, regardless of age. These individuals are assessed for admission on the basis of their most recent academic experience.

Mature matriculants are normally considered for admission to the First year of an undergraduate program in Arts, Science or Engineering. Students seeking admission to the Faculty of Science who do not hold the necessary prerequisites may be required to take Qualifying-University-year courses in addition to the regular program. Students in a similar situation in relation to the Faculty of Engineering will not normally be considered until such time as the necessary prerequisites have been completed.

Mature matriculants are not usually considered for entry into Honours programs (e.g. Business, Computer Science) or into Architecture or Industrial Design. If, however, at the end of their First year they meet the requirements for an Honours program, they may apply to transfer to the program of their choice.

Applicants are required to submit proof of age and biographical information with their application for admission.

Special students at Carleton University who meet the age requirement will normally be considered for admission as mature matriculants if:

(a) they have obtained a grade of C- or better in at least one credit (or equivalent), in one attempt; and

(b) they are eligible to continue as Special students.

Individuals considering admission under the mature matriculation category are invited to seek advice at one of the following offices:

The Office of Admissions;  
School of Continuing Education.

#### **Special Students**

Special students may be admitted to degree study upon indicating, through academic achievement at Carleton, a reasonable probability of future academic success. However, previous post-secondary studies will be taken into consideration at the time an application for admission is evaluated. Students with previous, unsuccessful post-secondary studies are encouraged to contact the Office of Admissions before attempting to qualify for admission on the basis of Special studies.

Normally, in the Faculty of Arts and the Faculty of Social Sciences, a Special student will be admitted after passing at least four credits with a C- standing or higher in at least two credits or equivalent.

Normally, in the Faculty of Science, a Special student will be admitted after passing at least four *approved* credits with a C- standing or higher in at least two credits or equivalent.

#### *Note:*

Students who perform at a higher level may gain admission after fewer credits, i.e. an A- average on two

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### **Mature and Special Admissions**

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#### **Mature Matriculation**

Persons who lack the normal entrance requirements as published in this calendar may receive consideration for admission under the mature matriculation policy. Applicants will normally have been away from full-time studies for a minimum of two calendar years and must be 21 years of age, or over, by December 31 of the year in which they wish to enrol.

Any person who meets the age requirement is eligible to be considered for admission as a mature matriculant to either part-time or full-time studies. This category is, however, designed for individuals who do not meet normal admission requirements but who would probably be successful in university studies.

Persons who satisfy the foregoing requirements will normally be admitted to a degree program if they have:

(a) secondary school graduation in an academic pro-

successive credits or a B- average on three successive credits.

Special students seeking admission must meet the requirements within the previous six credits preceding formal application for admission and may not present more than two supplemental or grade-raising examinations in meeting the requirements for admission.

Special students who meet the age requirement for mature matriculation will normally be considered on this basis only if they have obtained a grade of C- or better in at least one credit (or equivalent) and are eligible to continue as Special students.

### Previous Carleton Students

All former students who had been formally admitted to a degree, certificate or diploma program at the undergraduate level, and who are seeking readmission either to that program or to another program, are governed by differing regulations, depending upon the faculty or school that offers the program.

Please refer to the relevant program section of this calendar or, if there is no specific entry dealing with readmission in that section, consult the appropriate faculty registrar's office to determine whether or not it is necessary to submit a new application for admission.

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## Admission Procedures

### How to Apply

Prospective students, when requesting an application directly from the University, should provide a complete outline of their academic background.

1. The following applicants must apply through the Ontario Universities' Application Centre (OUAC):

(a) Current Ontario Grade 12 and Grade 13 students should obtain a preprinted application form from their high school and arrange to have it submitted to the Application Centre.

(b) Overseas applicants must obtain a copy of the OUAC 105F application form designed for them. The Application Centre's address is P.O. Box 1328, Guelph, Ontario, Canada. N1H 7P4.

(c) Other applicants should obtain a common application form from the Office of Admissions, Carleton University, and submit this completed form to the Application Centre.

2. All applicants are required to reveal all previous secondary and post-secondary studies (whether they were successfully completed or not) when completing the application for admission.

3. When more than one application choice is directed to Carleton, only the first choice is initially processed. In the event that admission cannot be approved for this program, the applicant will automatically be considered for other choices.

4. Previous Carleton University students do not apply through the Application Centre unless they wish to be considered for admission to another Ontario university. If they wish to apply solely to Carleton, they request a Carleton application form from the Office of Admissions and submit the completed form directly to that office. If they wish to apply to another Ontario university as well as to Carleton, they should, in addition, request a common application form (OUAC 105), complete and mail it with the application fee to the Centre. Carleton should *not* be included as a choice on the OUAC 105 form.

### Application Deadlines

The following are application dates for the 1986 admission year:

February 1: Candidates whose documents originate outside Canada or the United States.

February 1: Candidates who are studying in Canada on a student visa.

July 1: Applicants for transfer from other universities and colleges in Canada or the United States.

July 1: Candidates applying as mature matriculants.

July 1: High school candidates whose documents originate in Canada or the United States.

(Note: Applications for admission may be received after this date but the University cannot guarantee that all late applications will be processed in time for registration in the academic session requested. Applicants to restricted programs should note that these programs may be filled by this date.)

August 15: Candidates applying for admission solely on the basis of work completed as Special students at Carleton University.

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### Documents

Documents submitted in support of an application for admission become the property of the University. In some cases, original documents (example General Certificate of Education) may be returned to the applicant.

The University may nullify an admission and revoke a registration if it finds that an applicant for admission or registration has, in the process, provided false or incomplete information.

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### Early Admission

Offers of early admission will be based on the previous year final and current year interim marks.

For Ontario high school applicants, the earliest date by which offers of admission can be received by candidates for the 1986 admissions cycle is June 13. The onus is on each student who does not receive an offer of early admission to supply official final marks to the Office of Admissions.

Out-of-province applicants will receive an offer of admission as soon as interim marks are received by the University and the assessment is completed.

Applicants to a restricted enrolment program should note that their acceptance to an offer of admission must be received by the Office of Admissions within two weeks from the date the offer was made.

Carleton reserves the right to withdraw offers of admission for failure to complete the school year satisfactorily. In addition, applicants are advised that although they may receive an offer of admission based on interim marks, final marks, when they are received, will become part of the University's admission record.



# Summary of Undergraduate Degree Programs

35

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## Architecture

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### Degree

B. Arch.

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### Length of Course from Junior Matriculation

6 years

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### Length of Course from Senior Matriculation

5 years

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### Admission Requirements, Qualifying-University Year

As there is no Qualifying-University year in Architecture, students must complete this level of study in high school or by registering in either Qualifying-University year Science or Engineering in an appropriate course pattern. Hence, the admission requirements at this level are those for Qualifying-University year Science or for Qualifying-University year Engineering as stated elsewhere in this chart.

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### Admission Requirements, First Year

The Ontario Secondary School Honour Graduation Diploma, or the equivalent, with a minimum 60% average and including Functions, Calculus and Physics; or the successful completion of Qualifying-University year with an appropriate course pattern.

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## Arts

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### Degrees

B.A.

B.A. (Honours)

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### Length of Course from Junior Matriculation

4 years

5 years for Honours

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### Length of Course from Senior Matriculation

3 years

4 years for Honours

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### Admission Requirements, Qualifying-University Year

The Ontario Secondary School Graduation Diploma. A 70% average must be presented on a minimum of ten Advanced or Enriched Phase credits at levels 3 and 4, including two of: English, a language other than English or Mathematics, at Level 4.

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### Admission Requirements, First Year

The Ontario Secondary School Honour Graduation Diploma, or the equivalent, with a minimum 60% average; or the successful completion of Qualifying-University year Arts.

For Honours: 65% on the Honour Graduation Diploma, or the equivalent.

For a Major in Mathematics, Functions and Calculus, or the equivalent (Mathematics 69.006★ and 69.007★) must be included; for a Major in Biology or Psychology it is recommended that they be included. For a Major in Psychology, English is also recommended. Students intending to major in Biology should, in addition, present Chemistry. Students intending to major in Canadian Studies should present French.

For a Major in Economics, students lacking Grade 13 Mathematics should take Mathematics 69.006★ and 69.007★. These will be counted as a credit toward a Major or Honours degree in Economics.

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Admission requirements are for the 1986-87 year only, and are based on the Ontario High School system. Holding the minimum admission requirements only establishes eligibility for consideration.

Commerce

Degree  
B.Com. (Honours)

Length of Course from Junior Matriculation  
5 years

Length of Course from Senior Matriculation  
4 years

Admission Requirements, Qualifying-University Year  
As there is no Qualifying-University year in Commerce, students must complete this level of study either in high school or by registering in Qualifying-University year Arts in an appropriate course pattern. Hence, the admission requirements at this level are those for Qualifying-University year Arts as stated elsewhere in this chart.

Admission Requirements, First Year  
The Ontario Secondary School Honour Graduation Diploma, or the equivalent, with a minimum 65% average, including Functions and Calculus; or the successful completion of Qualifying-University year, with an appropriate course pattern.

Computer Science

Degree  
B.C.S. (Honours)

Length of Course from Junior Matriculation  
5 years

Length of Course from Senior Matriculation  
4 years

Admission Requirements, Qualifying-University Year  
As there is no Qualifying-University year in Computer Science, students must complete this level of study in high school or by registering in an appropriate course pattern in Qualifying-University year Arts, Science or Engineering.

Admission Requirements, First Year  
The Ontario Secondary School Honour Graduation Diploma, or the equivalent, with a minimum 65% average and including Functions and Calculus (Physics is required for the Hardware and Scientific Applications areas of specialization and would be advantageous for the remaining areas); or the successful completion of Qualifying-University year with an appropriate course pattern.



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**Engineering**

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*Degree*

B. Eng.

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*Length of Course from Junior Matriculation*

5 years

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*Length of Course from Senior Matriculation*

4 years

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*Admission Requirements, Qualifying-University Year*

The Ontario Secondary School Graduation Diploma. A 70% average must be presented on a minimum of ten Advanced or Enriched Phase credits at levels 3 and 4 including an appropriate preparation in Chemistry, Physics and Level 4 Mathematics.

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*Admission Requirements, First Year*

The Ontario Secondary School Honour Graduation Diploma, or the equivalent, with a minimum 65% average and including Functions, Calculus, Chemistry and Physics; or the successful completion of Qualifying-University year with an appropriate course pattern.

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**Industrial Design**

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*Degree*

B.I.D.

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*Length of Course from Junior Matriculation*

5 years

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*Length of Course from Senior Matriculation*

4 years

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*Admission Requirements, Qualifying-University Year*

As there is no Qualifying-University year in Industrial Design, students must complete this level of study in high school or by registering in either Qualifying-University year Science or Engineering in an appropriate course pattern. Hence, the admission requirements at this level are those for Qualifying-University year Science or for Qualifying-University year Engineering as stated elsewhere in this chart.

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*Admission Requirements, First Year*

The Ontario Secondary School Honour Graduation Diploma, with a minimum 65% average and including Functions, Calculus, Chemistry and Physics; or the successful completion of Qualifying-University year with an appropriate course pattern.

**Journalism**

Degree  
B.J. (Honours)

*Length of Course from Junior Matriculation*  
5 years

*Length of Course from Senior Matriculation*  
4 years

*Admission Requirements, Qualifying-University Year*  
As there is no Qualifying-University year in Journalism, students must complete this level of study either in high school or by registering in Qualifying-University year Arts in an appropriate course pattern. Hence, the admission requirements at this level are those for Qualifying-University year Arts as stated elsewhere in this chart.

*Admission Requirements, First Year*  
The Ontario Secondary School Honour Graduation Diploma, or the equivalent, with a minimum 65% average, including a language other than English (French is recommended); or the successful completion of Qualifying-University year with an appropriate course pattern.

**Music**

Degree  
B.Mus. (Honours)

*Length of Course from Junior Matriculation*  
5 years

*Length of Course from Senior Matriculation*  
4 years

*Admission Requirements, Qualifying-University Year*  
As there is no Qualifying-University year in Music, students must complete this level of study either in high school or by registering in Qualifying-University year Arts. Hence, the admission requirements at this level are those for Qualifying-University year Arts as stated elsewhere in this chart.

*Admission Requirements, First Year*  
The Ontario Secondary School Honour Graduation Diploma, or the equivalent, with a minimum 65% average; or the successful completion of Qualifying-University year.



<b>Public Administration</b>	<b>Science</b>
<i>Degree</i> B.P.A. (Honours)	<i>Degrees</i> B.Sc. B.Sc. (Honours)
<i>Length of Course from Junior Matriculation</i> 5 years	<i>Length of Course from Junior Matriculation</i> 4 years 5 years for Honours
<i>Length of Course from Senior Matriculation</i> 4 years	<i>Length of Course from Senior Matriculation</i> 3 years 4 years for Honours
<i>Admission Requirements, Qualifying-University Year</i> As there is no Qualifying-University year in Public Administration, students must complete this level of study either in high school or by registering in Qualifying-University year Arts. Hence, the admission requirements at this level are those for Qualifying-University year Arts as stated elsewhere in this chart.	<i>Admission Requirements, Qualifying-University Year</i> The Ontario Secondary School Graduation Diploma. A 70% average must be presented on a minimum of ten Advanced or Enriched Phase credits at Levels 3 and 4, including an appropriate preparation in Chemistry, Physics and Level 4 Mathematics.
<i>Admission Requirements, First Year</i> The Ontario Secondary School Honour Graduation Diploma, or the equivalent, with a minimum 65% average; or the successful completion of Qualifying-University year.	<i>Admission Requirements, First Year</i> The Ontario Secondary School Honour Graduation Diploma, or the equivalent, with a minimum 60% average, and including Functions, Calculus and two Sciences; or the successful completion of Qualifying-University year with an appropriate course pattern.  For Honours: 65% on the Honour Graduation Diploma, or the equivalent. For Honours in Psychology Level 5 English is recommended.

# Registration

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## Requirements

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All students attending the University are required to register in their courses with the registrar's office of the appropriate jurisdiction at the time designated for the session, and to inform that office in writing of any changes in registration.

Students who do not register at times designated for their session will be charged a late registration fee. (See p. 46.)

A student who is required to withdraw from a Degree, Certificate or Diploma program is ineligible to register as a Special student for one calendar year. In addition, such students should not normally expect to gain readmission to a program on the basis of work completed as a Special student nor should they expect to retain credit for these courses.

A student's registration shall not be considered to be complete until arrangements have been made for the discharge of all financial responsibilities to the University in accordance with the University policies.

No student will be permitted to register until all outstanding accounts due to the University have been paid. (See Delinquent Accounts, p. 47.)

The University may nullify an admission and revoke a registration if it finds that an applicant for admission or registration has, in the process, provided false or incomplete information.

## Health Service Requirement:

See p. 48.

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## Course Selection

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Students proceeding to a Degree, Diploma or Certificate must select their courses according to the requirements set by their faculty or school, and major department.

Students planning to undertake professional training beyond their undergraduate studies should ensure that their programs meet the requirements of admission to their intended school or faculty.

## Cross-Referenced Courses

Some courses appear in the Calendar more than once. These cross-referenced courses may be taken in any of the departments under which the course is listed. Students are advised, however, to consult with their major department as to the appropriate designation, assigned to the course, for their program of study.

The departmental designation may not be changed after the last date for withdrawal in the appropriate term or session.

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## Challenge for Credit

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Challenge for Credit is a Carleton University policy that enables students to gain undergraduate academic credit for their own learning and experience outside the University.

Challenge for Credit is available only to students formally admitted to and registered in a program leading to a Degree, Diploma, or Certificate.

Special students are not eligible to challenge for credit.

Simply stated, Challenge for Credit gives the student the opportunity to be examined on, and receive credit for, a recognized Carleton course without meeting the normal requirements of registration, attendance, and instruction. Students wishing to Challenge for Credit should enquire at their faculty registrar's office, with documentation to support the challenge. If the academic department, after an interview, is satisfied that the student has adequate experience and learning related to the course in question, it accepts the challenge and sets an appropriate examination. If the student is successful in the examination, the course is credited to his or her academic record:

Not all courses offered at the University are open to Challenge for Credit.

See also *Fees*, p. 46.

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## Transfer of Credit for Courses Completed at Other Universities

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### 1. Prior to Admission

At the time a student is considered for admission, credit may be granted for individual courses successfully completed at other recognized, degree-granting institutions, if:

- (a) the individual courses are relevant to a student's proposed program; and
- (b) the appropriate academic department recommends such action.

Each application is evaluated on its own merits.

### 2. Subsequent to Admission

Students who have been formally admitted to a Carleton degree or certificate program may take courses at another university and have the credit transferred to their program if a Letter of Permission is received before commencing the course.

For faculty procedures for obtaining a Letter of Permission, see the appropriate section of this Calendar or consult the office of the appropriate faculty registrar.

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## Auditing Courses

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A student may, with the instructor's consent, register to audit a course (i.e. attend without receiving credit), in addition to those courses being taken for credit. Although audited courses receive no academic credit, they are counted as part of the total course load.

Full-time students may register to audit a course without an additional fee; all others must pay the regular course fee.

Students are not permitted to audit courses with restricted enrolment.

Students who enrol to audit must so indicate on their registration form or course-change form. The deadline for change from audit to credit or credit to audit is the last day for course changes.

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## Course Changes

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Changes of course (including changes of status from credit to audit or audit to credit) or changes of section within a course must be applied for at the appropriate



faculty registrar's office. Changes must be made by the dates designated in the Calendar under the Academic Year (pp. 11-12). Changes of course must be approved by the major department. (See also Fees, p. 45.)

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### Program Changes

Students wishing to change faculty or school, or to change majors, or to change between major and honours, must apply to make such changes. Applications should be made at the registrar's office of the faculty in which the student is registered, after consultation with the faculty, school or departments concerned.

Students wishing to change from a major to an honours program should submit an application on or before October 1.

The deadlines for application for degree program changes are:

#### *Fall/Winter Session*

1. Fall term: September 1.
2. Winter term: January 1.

#### *Summer Session*

May 1.

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### Withdrawal

Students who are withdrawing from a course or courses, or entirely from the University, must notify their appropriate faculty registrar's office, either on the specific form designated for the purpose and available from that office, or by letter.

The official date of withdrawal is the date on which the notification is received in the faculty registrar's office. Fee adjustments for students withdrawing will be calculated as of that date.

Students *must* withdraw from a course or courses, or from the University, on or before the appropriate last date for withdrawal as shown in the calendar for the Academic Year. (See pp. 11-12.) The withdrawal, along with the date of withdrawal, will be entered on the student's transcript as *Wdn*, which is defined as "Withdrawn in good standing. No academic credit."

It is not possible to withdraw from a course or courses, or from the University, *after* the appropriate designated last date for withdrawal, and no partial refund of credit is available unless all required procedures, as outlined above, have been completed by the student on or before the appropriate designated last date for withdrawal.

For complete details about partial refund of credit see pp. 46-47 (Fees).

For the various last dates for withdrawal for the 1986-87 Academic Year see pp. 11-12.

#### *Notes:*

1. The responsibility for taking all steps necessary for withdrawal is entirely that of the student. Ceasing to attend classes, or informing an instructor of intent to withdraw *does not* constitute withdrawal.
2. Withdrawal may affect the student's promotion status as prescribed by regulations of the various faculties and schools. Students are advised to consult their faculty registrar's office for information and guidance.

3. A student who withdraws from a course retains no academic credit for any part of that course.

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### Residence Requirement

In order to qualify for a Degree from Carleton University, a student must complete a minimum number of credits at Carleton University. For the specific number and type of courses required, refer to the appropriate faculty section of this Calendar.

To obtain an undergraduate Certificate or Diploma from Carleton University, students must present a minimum of four credits taken at Carleton, including all core courses.

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### University of Ottawa Exchange Agreement

A full-time undergraduate student in Second or higher year may, with departmental permission, take the equivalent of one credit per Fall/Winter session at the University of Ottawa without additional fee. Interested students should enquire at their faculty registrar's office. This exchange agreement is not in effect for the Summer session.

The libraries of the University of Ottawa and Carleton University extend reciprocal borrowing privileges to undergraduate students registered in their Fourth year.

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### Other Exchange Agreements

Undergraduate students may be eligible to take advantage of other exchange agreements with universities in the United States and Europe. For details, students should consult their registrar's office and the Paterson Centre for International Programs a year in advance of the proposed exchange.

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### Student Records

Incorrect address information will delay the receipt of awards, examination results and notification of changes in academic status. Students must notify their faculty registrar's office immediately of any change in:

- (a) permanent or home address (used for final grades and registration information);
- (b) local address (used for all mail during the academic session);
- (c) telephone number for permanent address and for local address;
- (d) name.

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### Summer Day Courses

Students are advised of the intensive nature of Summer Day courses and that they should consult with the appropriate department(s) prior to enrolling in two Summer Day courses.

# Academic Standing

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## General

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The Senate may at any time require a student to withdraw from the University if his or her conduct, attendance, work or progress is deemed unsatisfactory.

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## Evaluation

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To gain standing in a course, a student must meet the course requirements for attendance, term work and examinations.

Instructors will inform their classes in writing before the last date for course change of the elements that will contribute to the final grade and their weighting, including attendance, class participation, essays, tests, laboratories or studio-workshops, or other course-related work assignments, and final examinations. In all undergraduate courses with written final examinations, instructors will also inform their classes that supplemental and grade-raising examinations are available to undergraduate students who have passed the course, or have been awarded a grade of *F*, or under conditions defined by the faculties, and of the method of computing a grade revised by these examinations. Students enrolled in the Bachelor of Engineering program are not eligible to write grade-raising examinations.

Supplemental and grade-raising examinations will not normally be available in courses without written final examinations.

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## Standing in Courses

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Standing in courses will be determined by departments. Standing in courses will be shown by alphabetical grades. The system of grades used, with corresponding grade points, is as follows:

A+ 12	B+ 9
A 11	B 8
A- 10	B- 7
C+ 6	D+ 3
C 5	D 2
C- 4	D- 1

The following percentage equivalents are published solely to assist other institutions in interpreting letter grades. Students are advised that these equivalents have no internal application.

A+ 90-100	B+ 77-79
A 85- 89	B 73-76
A- 80- 84	B- 70-72
C+ 67- 69	D+ 57-59
C 63- 66	D 53-56
C- 60- 62	D- 50-52

Other notations are as follows:

### *Aeg*

Pass standing granted under special circumstances. Aegrotat standing is granted only by a faculty committee, in response to a student's application. (See Deferred Final Examinations, p. 43.)

### *Aud*

Indicates course is not being taken for academic credit.

### *F*

Failure. No academic credit.

### *FNS*

Failure without access to supplementals because of incomplete term work or unacceptably low standing. No academic credit.

### *Abs*

Absent from final examination. No supplementals. No academic credit. *Abs* is usually equated to failure.

### *Wdn*

Withdrawn in good standing. No academic credit.

### *Def*

Indicates deferral of final grade has been approved by a faculty committee. (See Deferred Final Examinations, p. 43.)

### *IP*

In Progress.

### *Ch*

Credit granted under challenge for credit policy.

### *Sat*

Satisfactory.

### *Uns*

Unsatisfactory.

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## Promotion and Probation

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The conditions under which undergraduate students may be promoted, and placed on or relieved of probation, are shown in the calendar entries for the faculties and schools.

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## Program Year

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Progress through degree studies is normally measured in terms of program years. The program year represents the accumulation of the number of credits normally taken in a Fall/Winter session of full-time study in the program in question. In addition, in some jurisdictions, program year implies the accumulation of a certain pattern of credits.

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## Accelerated Progress

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Qualifying-University-year students who perform at an above-average level may achieve a reduction in the number of credits required to graduate, under the "Accelerated Progress" policy. Detailed requirements are shown in the calendar entries for faculties.

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## Graduation Requirements

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In order for a student to receive his or her degree, he or she must fulfil:

1. all the requirements of the department(s), school or institute in which he or she is taking the degree;
2. all faculty regulations;
3. all University regulations;
4. all financial obligations to the University.



The student is responsible for meeting graduation requirements. Acceptance of a registration does not grant exemption from any regulation.

Students who wish to be considered for graduation must apply at their faculty registrar's office by the following deadlines:

Winter Graduation (February): December 1

Spring Graduation (June): February 1

Fall Graduation (November): September 1

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## Examinations

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Students writing tests and examinations should be aware of the rules governing examination conduct, which are printed on the cover of official examination booklets.

It may be necessary to schedule mid-year and final examinations for classes held in the evening during the day and vice versa.

All tests and examinations, except laboratory examinations, oral and slide tests and other particular tests, are subject to the following rules:

1. Tests or examinations given in class may not exceed the time allotted for the class.
2. Final examinations in the Summer session will be held in official examination periods.
3. In Qualifying-University- and 100-level courses mid-year and final examinations will be held in the official examination periods.
4. In Qualifying-University-, 100-, 200-, and 300-level courses, no tests or examinations may be held during the last two weeks of classes in the Fall or Winter term of the Fall/Winter session, between the end of classes in the Winter term and the beginning of formally scheduled examinations or in the last two weeks of classes of the Summer session.
5. In courses below the 400 level, take-home examinations may not be assigned before the last day of classes and are due on the last day of the official examination period.
6. In courses at the 400 level, arrangements for unscheduled examinations are at the instructor's discretion but must be announced at least three weeks before the examinations.

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## Deferred Final Examinations

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Students who are unable to write a final examination because of illness or other circumstances beyond their control, or whose performance on the examination has been impaired by such circumstances, may, on application, be granted permission to write a deferred final examination. Such applications must:

1. be made in writing to the appropriate faculty registrar's office within a week after the original final examination (students in the Faculties of Arts and Social Sciences see p. 88); and
2. be fully supported in cases of illness by a medical certificate or by appropriate documents in other cases.

Aegrotat standing will be considered for applicants for deferred finals but will be granted only if term work has been of high quality. A student granted aegrotat standing

may apply to write a deferred final examination. Deferred final examinations are written at the time of the supplemental examinations for the session concerned.

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## Supplemental Examinations

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Supplemental examinations are available in all undergraduate courses with written final examinations. Undergraduate students may, on application, write supplemental examinations in courses graded *F*, under conditions defined by the faculties.

Supplementals must be written at the next supplemental examination period, and if a supplemental is failed, the student must repeat the course before writing another examination in it.

Students may apply to write supplemental examinations outside of Ottawa.

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## Grade-Raising Examinations

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Grade-raising examinations are available in all undergraduate courses with written final examinations. However, students enrolled in the Bachelor of Engineering program are not eligible to write grade-raising examinations. All other undergraduate students may, on application, write grade-raising examinations in courses already passed, under conditions defined by the faculties.

The grade awarded subsequent to a grade-raising examination supersedes the original final grade. A grade-raising examination in a course can be written only once, and at the next scheduled supplemental examination period.

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## Review of Grades

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Students are entitled to review of a final grade. Those wishing to receive such a review should enquire at their faculty registrar's office, after which they may wish to make a formal application for this review. Applications must be filed with the appropriate faculty registrar's office within 14 days of the official release of grades for the term.

### Note:

The review may lower the grade.

Requests for review are dealt with by the departmental chairmen in consultation with members of the department.

The fee for each review (see p. 46) is refundable if the grade is raised. Students awaiting the outcome of a review must still apply for any supplemental examination by the prescribed deadline.

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## Release of Grades

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A Statement of Marks is mailed to each student as soon as the grades are available after the end of the Fall and Winter terms of the Fall/Winter session and after the end of the Summer session. A Statement of Marks is mailed to every applicable student as soon as possible after each supplemental examination period.

Students may obtain a copy of their official transcript by completing a copy of the "Request for Academic Tran-

script" form which is available in the Student Liaison Office, Room 315, Administration Building. Transcripts required for professional and graduate schools should be ordered well in advance of any deadline set by these institutions.

Students are advised that no Statement of Marks or official transcripts will be released by the University until all outstanding accounts due have been paid. (See Delinquent Accounts, p. 47.)

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### Instructional Offences

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The Senate of the University has enacted the following regulations for instructional offences:

Any student commits an instructional offence who:

1. cheats on an examination, test, or graded assignment by obtaining or producing an answer by deceit, fraud or trickery, or by some act contrary to the rules of the examination;

2. contravenes the regulations published at an examination or which are displayed on the reverse side of a properly authorized examination booklet;

3. commits an act of plagiarism (which for the purpose of this regulation shall mean to use and pass off as one's own idea or product work of another without expressly giving credit to another);

4. disrupts a class or other period of instruction if he or she:

(a) is a registered member of the class or period of instruction;

(b) is warned to discontinue any act or behaviour reasonably judged by the instructor of the course or period of instruction to be detrimental to the class, and having ignored such warning is ordered by the instructor to leave and refuses to leave.

5. Any student found in violation of these regulations may be:

(a) expelled;

(b) suspended from all studies at the University;

(c) suspended from full-time studies;

and/or

(d) awarded a reprimand;

(e) refused permission to continue or to register in a specific degree program but subject to having met all academic requirements shall be permitted to register and continue in some other program;

(f) placed on academic probation;

(g) awarded an *FNS*, a *Fail*, or *Abs* in a course or examination.

Allegations of instructional offence may be investigated by instructors and/or departmental chairmen and, in all cases, will be reported to the faculty Dean. The Dean will promptly advise, in writing, the student and the University Ombudsman of the allegation and of the student's rights. The Dean will review the allegation and, if not resolved at that level, the allegation becomes subject to final disposition by a tribunal appointed by the Senate. Information about procedure governing tribunals is available from the Clerk of the Senate, Room 607, Administration Building.



## General Information

1. This Calendar is published several months in advance of the academic year. The University reserves the right to change fees and refund policies without notice.

2. Tuition fees include laboratory and survey camp fees, where applicable. In addition, *compulsory miscellaneous fees* (see below) are also assessed.

## Tuition Fees, 1985-86 Fall/Winter Session

### Canadian Citizens, Landed Immigrants and Foreign Students Exempt from Visa Regulations (see below)

*Full-Time (four or more full-credit courses)*

Qualifying-University Year	\$1,578.00
Arts, Commerce, Public Administration, Journalism, Music, Science, Computer Science and Special Engineering, Architecture and Industrial Design and Special	\$1,214.00
	\$1,319.00

*Part-Time (per full-credit course, see note a)* \$ 237.00

### Visa Students

1. Visa students who have successfully completed one or more terms of a program at an Ontario university prior to September 1, 1982:

*Full-Time (four or more full-credit courses)*

All programs \$2,534.00

*Part-Time (per full-credit course, see note a)* \$ 505.00

2. Visa students who have *not* successfully completed one or more terms of a program at an Ontario university prior to September 1, 1982:

(a) Qualifying-University Year, Full-Time \$1,578.00

(b) Type A Programs: Arts, Commerce, Public Administration, Journalism, Music, Science, Computer Science and Specials:

*Full-Time (four or more full-credit courses)* \$4,584.00

*Part-Time (per full-credit course, see note a)* \$ 914.00

(c) Type B Programs: Engineering, Architecture, Industrial Design and Specials:

*Full-Time (four or more full-credit courses)* \$7,471.00

*Part-Time (per full-credit course, see note a)* \$1,494.00

## Miscellaneous Fees: All Full-Time Students (1985-86 rate)

Student Accident/Sickness Insurance (see note d)	\$ 10.80
Students' Association	\$60.50
Athletics	81.10
Health Services	23.00
University Centre	20.00
Total	\$184.60
	\$195.40

## Miscellaneous Fees: Part-Time Students (per full-course credit (1985-86 rate))

Student's Association	\$ 12.10
Athletics	16.20
Health Services	4.06
University Centre	4.00
Total	\$ 36.36

## Notes

(a) The half-credit course fees will be assessed at one half the full-credit course amounts.

(b) Re-registration in an Honours paper or thesis will be assessed fees equivalent to the prevailing half-course fee.

(c) Students transferring from a Fall-term half-credit course to a Winter-term half-credit course will be given credit for the unexpired portion of the Fall-term half-credit course and charged full fee for the Winter-term half-credit course.

(d) The student accident/sickness insurance coverage is based on a one-year period from October 1 to September 30. The insurance fee of \$10.80 is payable once a year, at registration in September.

## Exemptions for Foreign Students

Subject to approval by the Office of Admissions, the following categories of foreign students are exempt from the foreign students' fee indicated above and will instead be assessed the regular tuition fee:

1. Persons, or dependents of persons, admitted to Canada under diplomatic visas. (Immigration Act, Section 10(c));

2. Dependents, excluding the spouse, of a person admitted to Canada on a special visa to practise his or her special profession for a specified period of time. (Immigration Act, Section 10(c));

3. Persons admitted to Canada under clause 10 (a) or (b) of the Immigration Act and who are sponsored and financially assisted by agencies such as the Canadian International Development Agency, International Development Research Centre, etc.;

4. Persons studying under a reciprocal exchange agreement recognized by the Ministry of Colleges and Universities.

Persons who believe that they qualify for exemption under one of the foregoing categories must submit documentation, at the time of registration, to support their claim. University personnel will be available at that time to answer any queries.

## Tuition Fees: Senior Citizens

All persons 60 years of age and over as of the last day for late registration may register in degree-credit courses and have their tuition fees waived. The only charge to these students is a \$5.00 per session registration fee.

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### Late Registration Charges

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The late registration charge is assessed according to the date registration is completed and is non-refundable. For the last day for late registration in any session or term, see The Academic Year, pp. 11-12.

Full-time Students	\$50.00
Part-time Students, per full-credit course	\$10.00

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### Method of Fee Payments

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Fees may be paid in accordance with either of the following plans.

1. Payment in full at the time of registration.
2. Payment in two installments:
  - (a) At registration, one half of the total tuition fee plus all miscellaneous fees plus a nonrefundable deferred payment charge of \$2.20 per half-course credit (\$22.00 for four or more course credits);
  - (b) at or before January 15, the remaining half of the total tuition fee.

Scholarships, bursaries, and loans administered by the University shall be applied first to fees, provided this is not contrary to the terms of the award.

Personal cheques will be accepted for payment of accounts but the University reserves the right to cancel the use of this method by any student if it is abused. A service charge of \$8.00 will be made for each cheque returned to the University as non-negotiable for any reason. Students are requested to have their own cheque forms available when making payments.

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### Miscellaneous Charges

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#### 1. Transcripts

Each student will be eligible for one free transcript at graduation. All other transcript requests will be processed after payment is made in advance at the Business Office at the rate of \$2.70 per transcript. Mailing address: Transcript Clerk, Room 315, Administration Building, Carleton University, Ottawa, K1S 5B6. (Enclose \$2.70 per transcript.)

#### 2. Letters of Permission

A charge of \$13.20 per course, (regardless of credit value) to a maximum of \$66.00 per academic session, will be assessed on each request for a Letter of Permission. This charge is payable in advance at the Business Office.

#### 3. Examination Charges

- (a) *Written at Carleton:* A charge of \$19.50 per paper applies for supplemental and grade-raising examinations, and for requests for grade reviews. There is no charge for deferred final examinations.
- (b) *Written Off-Campus:* In addition to the charge in (a) above, a charge of \$19.50 applies for each paper written at a location other than at Carleton.
- (c) Examination charges are non-refundable. The grade review charge will be refunded if the grade is raised.

#### 4. Challenge for Credit

A \$52.50 non-refundable charge applies for each challenge for credit. (See also p. 40.)

#### 5. Certificates for Income Tax Purposes

Tuition Certificates and Certificates of Attendance for income tax purposes will be available from the Business Office by the end of February to all students who have paid their accounts in full. Students will be charged \$2.70 in advance for each duplicate/replacement tax certificate requested.

#### 6. Replacement Student Identification Cards

A charge of \$5.00 will be assessed for the replacement of student identification cards, payable at the time of replacement. Returning students will be required to pay this amount before obtaining a new card at registration in the event that the student's card is not available for validation.

#### 7. Replacement of Graduation Diplomas

A charge of \$10.00, payable in advance, will be assessed for the issuing of replacement Diplomas. Mailing address: Records/Operations, Room 405, Administration Building, Carleton University, Ottawa, K1S 5B6.

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### Overdue Accounts

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Fees are due and payable at the time of registration. Students may, however, be permitted to select a payment program, in which case the last payment due-date is January 15. Should a student fail to complete the payments as arranged at registration, or fail to make satisfactory arrangements for the discharge of fees or other outstanding amounts by the last payment due-date, the University reserves the right to cancel the student's registration. All charges and outstanding fees accrued to the date of cancellation will remain due and payable on the student's account.

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### Withdrawal and Fee Adjustment

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See also p. 41.

The composite fee for full-time students is a charge for four credits or more. No charge is made for the fifth or any additional credits; conversely, no fee adjustment will arise as a result of withdrawal from a course by a full-time student unless the change alters his or her status from full-time to part-time.

Students who withdraw from a course, or from the University, are required to notify their Faculty Registrar in writing, or fill out the appropriate forms available from the Faculty Registrar's Office. A fee adjustment will be calculated according to the effective date appearing on the withdrawal/change form.

A fee adjustment may be made for withdrawals before the last date for late registration in the Fall term. This adjustment will amount to the composite fee less a registration charge calculated at the rate of \$6.00 per half-credit for part-time students and \$60.00 for full-time students. After the last date for late registration, the tuition portion of the composite fee, less the registration charge, is amortized over the period from the first day of



classes to the last date for withdrawal with partial refund credit.

A detailed schedule of withdrawal credits is available at the Business Office. As an example, the following is an

illustration of how this schedule applies to a student registered in the Fall/Winter session in Arts. (1985-86 fees are used in this example.)

	Full-Time (4 or more credits)	Part-Time (per full-credit course)
Original Assessment	\$1,398.60	\$273.36
Less: Registration Charge	\$ 60.00	\$ 12.00
Credit up to last day for Late Registration (September 19, 1986)	\$1,338.60	\$261.36
Less: Miscellaneous Fees (after September 19, 1986)	\$ 184.60	\$ 36.36
Amount to be pro-rated over period September 8, 1986 — February 13, 1987 (last day for withdrawal for Fall/Winter session full-credit courses with partial refund credit)	\$1,154.00	\$225.00

The amount to be pro-rated is spread over the period from the first day of classes to the last day for withdrawal with partial refund credit. In the case of the foregoing example any student who withdraws after the last day for late registration will receive a withdrawal credit of \$1,154.00 (\$225.00 part-time, per full-credit course) less approximately \$10.00 per day (\$2.00 per day part-time, per full-credit course) for each day the University is normally open as determined by the effective date appearing on the withdrawal/change form.

Note that miscellaneous fees are not refundable after the last day for late registration. Late registration or deferred payment fees are not refundable.

The appropriate withdrawal credit will be applied to the student's account and any amounts due at that time will be offset before a cash refund is prepared.

Following are the last dates for withdrawal with partial refund credit. Application for withdrawal and fee adjustment may not be considered if received after these dates:

- 1986-87 Fall/Winter Session*  
November 14, 1986, Fall-term course  
February 13, 1987, Fall/Winter session course  
March 13, 1987, Winter-term course
- 1987 Summer Session*  
June 16, Evening division First-term half-credit course  
July 20, Evening division full-credit course  
July 29, Day division and Evening division Second-term half-credit course

**Delinquent Accounts**

Registration shall not be complete until a satisfactory arrangement has been made for the payment of fees, and may be cancelled should the student fail to meet these arrangements.

If students owe the University any money at the end of an academic session their accounts become delinquent.

Students with delinquent accounts will not receive examination results, are not permitted to receive transcripts, may not graduate and will not be permitted to register again until all monies owing have been paid in full by cash or certified cheque.

**Locker Rentals**

A rental fee is charged for the use of locker space during the academic year. Lockers are allocated on a first-come first-served basis and may be shared. Locks will be removed from lockers occupied by unauthorized persons and the contents turned over to Parking Office. No refunds or exchanges will be made.

Lockers must be vacated by May 1 for the Fall/Winter session and by August 20 for the Summer session, after which they will be cleared and the contents treated as abandoned and will be disposed of by the University without further notice.

Parking Office: 564-3725.

**Parking**

Permission to park on the campus is granted for a fee to students and others associated with the University, but this permission is conditional upon co-operation in the observance of the regulations. Penalties will be imposed for infractions and, under certain circumstances, cars will be towed away at the owner's risk and expense. Security personnel are authorized to issue City of Ottawa traffic tickets on campus. Fines for City of Ottawa tickets are set by the City and may vary from time to time. Any vehicle not displaying a valid Carleton Permit is subject to this type of ticket.

In this, as in other respects, examination grades will be withheld from students owing sums of money to the University. Unless cause can be shown, the third infraction may lead to withdrawal of parking privileges. The University accepts no responsibility for cars or their contents parked or operated on the campus. The regulations related thereto are available in the Traffic and Parking Office. Students and staff who bring cars to the campus are expected to make themselves familiar with these regulations. Parking lots are indicated on the map at the back of the Calendar, pp. 458-459.

Parking Office: 564-3725.

# Health Regulations

## Insurance Regulations and Information

Medical insurance is compulsory for all full-time students. It is the student's responsibility to provide the insurance number when receiving medical care.

All residents of Ontario must be covered by OHIP.

### OHIP Information

Full-time students are covered under their parents' plan until their twenty-first birthday. When an individual becomes 21, continued coverage is not automatic. Each person must apply for coverage in his or her own name. This should be done a few months prior to the twenty-first birthday. Full-time students may be eligible for premium assistance to help pay OHIP premiums.

Physicians' fees at Health Services, as well as laboratory work, X-rays, and most referrals are paid for by the Ontario Health Insurance Plan (OHIP). Details and various benefits of the plan are too detailed to be covered here. It is important, therefore, for every student to read *The Ontario Health Insurance Plan General Guide*. This booklet is available without cost at Health Services, 6th Level Unicentre, 564-2755.

### New Residents to Ontario

For students entering Ontario from outside Canada who apply immediately for OHIP coverage, OHIP will be effective the first day of the next month following application.

Students whose Canadian residence is outside Ontario should have coverage under their provincial plan. These claims are processed directly at the Health Services.

You should carry the health insurance number with you at all times.

If you do not have a number you will be billed immediately for the services and the University will withhold the marks of students with outstanding accounts.

## Immunization Record

It is recommended that new students:

1. have a tuberculin skin test unless they are tuberculin-positive, in which case a chest X-ray is required; and
2. obtain from their family physician documentation of their immunization status to red measles, German measles, mumps, polio and tetanus.

## Objections to Health Regulations

Students who object to the foregoing requirements on conscientious grounds must consult the University physician, and provide a written statement giving the basis for such objection.

## Fees

The student health fee is used to pay for special medical supplies, the after-hours health services and educational program expenses. In addition, the fees cover that portion of costs for salaries and supplies related to the administration of Health Services. The service is an ancillary, self-financed department.

# University Library

The University Library is located on the south-west side of the main quadrangle. The collection consists of over one million books and periodicals and more than 500,000 microfilms, microfiches, cassettes and discs. The majority of these items are on open shelves. The Map Library, with 110,000 maps and atlases, is housed in the Loeb Building, Room D299.

The library's main (or second) floor contains the Reference and Information, Circulation, Interlibrary Loans, and Photocopy services. The first floor houses books and periodicals in science and technology and the Micro area; the third contains books and periodicals in the humanities, and the Audio-Video services; while the fourth and fifth floors contain the remainder of the collection, with Documents in a separate area on the fifth floor. Seating is available on all floors.

The library is governed by regulations approved by Senate, copies of which are available at the Information Desk.

The library collection is protected against theft by an electronic book detection system. As a condition of use of the library, all users must submit books, brief cases, bags, etc. for inspection at the exit, if requested to do so. Late return fees are charged for overdue books and, as noted under "Delinquent Accounts," examination grades and transcripts will be withheld from students owing money to the University.

Geoffrey H. Briggs, *M.A. (Cambridge) Dip.Lib., Dip. Arch. (London)*, University Librarian

Neil Brearley, *B.Sc. (London) B.L.S. (British Columbia)*, Information Services

E. Martin Foss, *B.A. (Alberta) B.L.S. (British Columbia)*, Technical Services

Verna Z. Wilmeth, *B.A. (San Jose) M.A.L.S. (Michigan)*, Administrative Services

Linda Rossman, *B. Math. (Waterloo) M.L.S. (Toronto)*, Systems Development

Milly Armour, *B.Sc. (Glasgow) B.L.S. (Ottawa)*, Reader Services

Gail Catley, *B.Sc., M.L.S. (McGill)*, Acquisitions

Terry Clark, *B.A. (Winnipeg) M.A. (Manitoba) M.L.S. (Western Ontario)*, Interlibrary Loans

Bozena Clarke, *B.A. (Carleton) M.L.S. (Toronto)*, Serials

Barbara Farrell, *B.A. (London) M.A. (Carleton)*, Maps

Susan Jackson, *B.A. (Carleton), B.L.S. (McGill)*, Documents

Jeremy Palin, *B.A., B.L.S. (British Columbia)*, Special Collections

Naomi Roberts, *B.A. (Oxford) M.S.L.S. (Catholic University of America)*, Gifts

Dorothy Rogers, *B.A. (Wellesley) M.A. (Yale) B.L.S. (Toronto)*, Cataloguing

Audrey Turner, *B.A. (Carleton)*, Special Services



The academic dress of Carleton University is a compromise between the style of hoods outlined in the American Intercollegiate Code and the dress of the ancient foundations of Britain and America. All three hoods, Bachelor's, Master's, and Doctor's, are of the simple or Oxford shape. The Bachelor's hood is made of black stuff, the Master's and the Doctor's of black silk, and all are lined with silver silk with two chevrons, one of red and one of black. From Bachelor's to Doctor's the hoods are progressively longer and opened to show more and more of the lining.

The velvet border of the hoods, 5 cm. in width for Bachelor's, 7.5 cm. for Master's and 8 cm. for Doctor's, denotes the degree granted, according to the following colour combinations: *Architecture*, cerise; *Arts*, white; *Commerce*, camel brown; *Computer Science*, royal blue; *Engineering*, orange; *Industrial Design*, dark cardinal; *Journalism*, white with a black cord sewn slightly in from the lower border; *Music*, Venetian pink; *Public Administration*, peacock blue; *Science*, golden yellow; *Social Work*, cream; *Doctor of Philosophy*, purple.

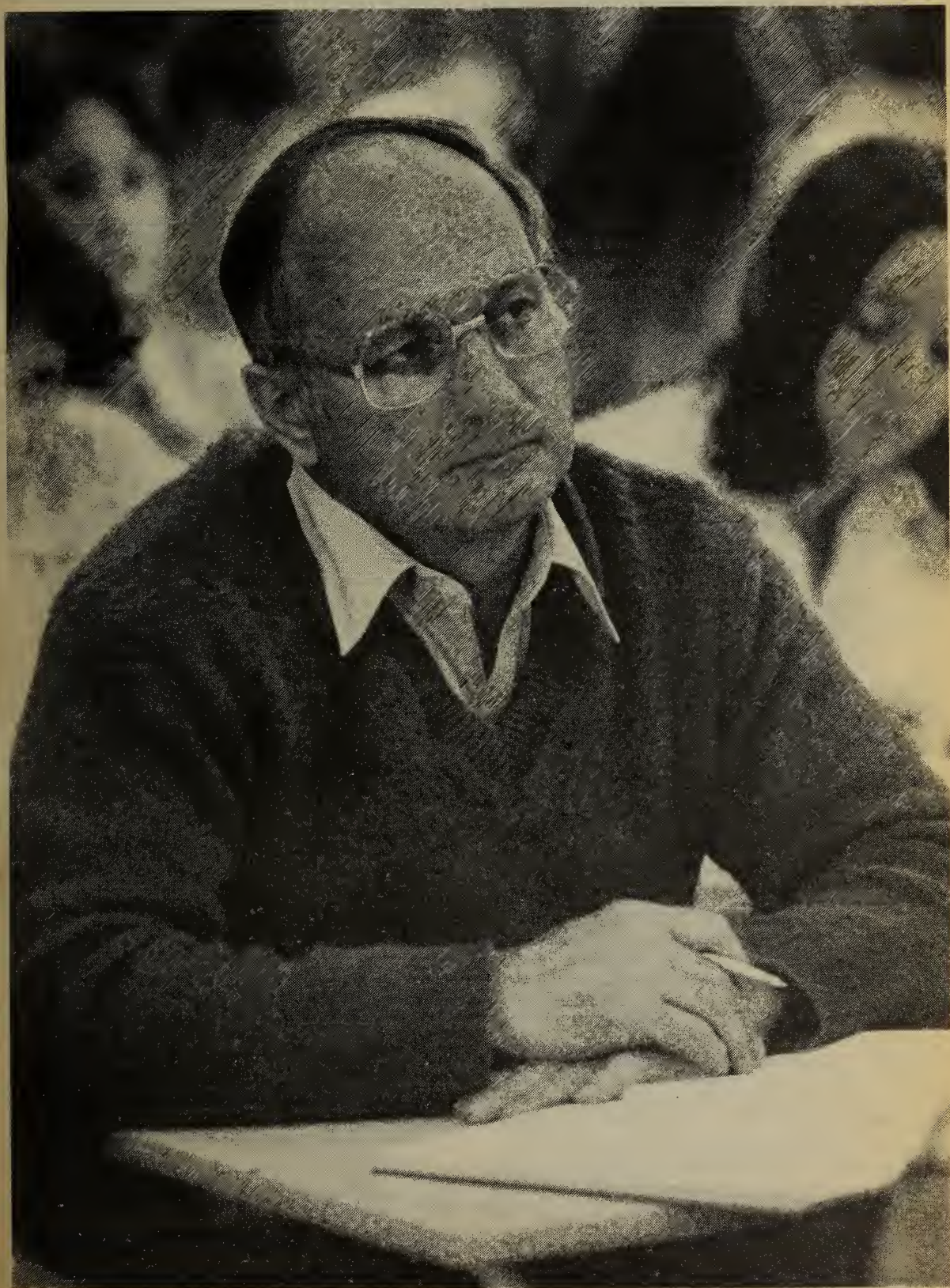
The Bachelor's gown, to be worn with the above hoods, is of full length, made of black stuff, with a gathered yoke behind, and long open-fronted sleeves. The Master's gown is of full style, made of black silk or rayon, with full gathered yoke behind, and closed sleeves with an opening at the elbows. The Doctoral gown is the same style as the Master's, made of fine royal blue cloth with facings of a light blue silk.

The gown of the Honorary Doctor of Laws, Literature, Science and Engineering is a blue robe with bell-shaped sleeves, made of fine royal blue cloth with facings and sleeves in light blue silk. The hood is made of the same material as the gown, has the same lining as that for the degrees granted by examination, and is bordered with dark mauve for the degree of Doctor of Laws, vibrant blue for the degree of Doctor of Literature, red for the degree of Doctor of Science and orange for the degree of Doctor of Engineering.





# School of Continuing Education







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## Officers of the School

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Tom Wilkinson, *Director*  
Regina Aulinskas, *Assistant Director, (non-credit courses)*  
Bernadette Landry, *Registrar, (counselling services)*  
Pamela J. Buxton, *School Administrator, (distance education)*

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## General Information

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The School of Continuing Education, in conjunction with other departments at Carleton, co-ordinates and develops both existing and new activities in adult, part-time and non-traditional education.

All currently registered and prospective Special students and Continuing Education students (see Student Classifications, below), should contact the School for *registrarial information* and to make *academic counselling* appointments (564-6660). Evening appointments are available.

All offices of the School are located in Room 302 Administration Building (564-6660).

## Office Hours

### *Labour Day to April 30*

Monday to Friday, 9 a.m.-5 p.m.

Monday to Thursday, 6:30-8:30 p.m.

### *May 1 to Labour Day*

Monday to Friday, 8:30 a.m.-4:30 p.m.

Monday to Thursday, 6:30 p.m.-8:30 p.m.

## Part-time and Non-traditional Studies

Information of particular interest to part-time students is contained in various sections of this calendar. The Carleton Glossary (p. 10), the Academic Year (p. 11), General Information (p. 13), the Course Designation System (p. 15), the University Office Guide (p. 17), Student Services (p. 19) and General Regulations (p. 27) are all sections of primary interest.

Current or prospective part-time Arts or Social Science degree students are encouraged to consult Faculty regulations outlined on pp. 81-91.

Current or prospective part-time Science degree students should familiarize themselves with Faculty of Science regulations found on pp. 327-334.

Current or prospective Computer Science degree students are encouraged to consult the entry for the School, pp. 61-70.

Further information may be obtained from appropriate Faculty Registrar's offices. (See University Office Guide p. 17 for the telephone numbers and locations.)

Carleton University offers *distance education* courses through television (ITV, over the local cable channel 15B or on video cassette in surrounding communities) and at a number of enriched environments in the greater Ottawa area. For further information concerning these courses contact the Distance Education Officer at 564-6660.

Through Carleton University's *Continuing Education (non-credit)* programs, a variety of short courses is available in business, professional and personal development and languages. *These Continuing Education courses (prefix CE) do not carry credit toward the completion of a degree.* The courses are described in a separate bro-

chure, which can be obtained from Room 302 Administration Building (564-6660).

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## Student Classification

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As outlined on p. 14, there are several distinct student classifications at Carleton. The three most basic are discussed in detail below. Students are classified on the basis of whether they have been formally admitted to a degree program, not on the basis of whether they are studying part-time or full-time.

Degree students are those who have been admitted to, and are enrolled in, a degree program, whether graduate or undergraduate, on either a full-time or part-time basis.

Special students are those who have not been admitted to a degree program but who are taking degree-credit courses to qualify for admission, to improve professional or vocational qualifications, for transfer credit or for personal interest. Any interested person is eligible to enrol as a part-time Special student.

Continuing Education students are those enrolled for non-credit courses and/or workshops offered through the School of Continuing Education. Detailed information regarding all non-credit programming can be obtained by telephoning 564-6660.

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## Special Students/Mature Matriculants

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Any interested person is eligible to enrol as a part-time Special student in degree-credit courses, subject to availability and presentation of any prerequisite(s) for the course(s).

Special students and mature matriculation applicants enrol in the same courses as students in degree programs. Day and evening courses are available.

All registrarial services for Special students and mature matriculation applicants are provided through the School of Continuing Education, Room 302, Administration Building, 564-6660.

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## Admission to Degree Programs

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Carleton University has always recognized that many adults may lack the formal requirements for admission as outlined on pp. 29-34 of this Calendar. Because of work experience and a mature outlook, it is expected that many of these adults will succeed in a degree program. Two avenues of admission to degree programs exist for these potential students: entry through regulations governing mature matriculants or entry following successful completion of a specified number of credits under regulations governing Special students. Special students considering degree studies are encouraged to consult with the School of Continuing Education at 564-6660 or the Office of Admissions at 564-3730.

Credits completed by a Special student may be applied towards a degree program only where a formal application of admission is made and the student is officially admitted to an undergraduate degree program.

### Proficiency in English

Since the instructional language of the University is English, applicants must be able to understand and be understood in English, both written and oral.

The University Senate has adopted the following statement of policy governing English language requirements for non-native speakers:

All visa applicants, including undergraduate, graduate and Special students, whose mother tongue is a language other than English, are required to present a minimum score of 550 on the *Test of English as a Foreign Language* (TOEFL) as part of the basic requirements for admission to the University.

Applicants who present a TOEFL score of less than 550 but not less than 500 may be permitted to register as Special students on the condition that they enrol concurrently in an appropriate English as a Second Language course.

Applicants who present a TOEFL score of less than 500 will only be permitted to register in non-credit English as a Second Language courses offered by the Centre of Applied Language Studies (see p. 401).

### Admission as a Mature Matriculant

Persons who lack the normal admission requirements as published in the Calendar may receive consideration for admission under the mature matriculation policy. Applicants will normally have been away from full-time studies for a minimum of two years, must be 21 years of age or over by December 31 of the year in which they wish to enrol, and must be either a Canadian citizen or permanent resident.

Any person who meets the age requirement is eligible to be considered for admission as a mature matriculant to either part-time or full-time studies. This category, however, is designed for individuals who do not meet normal admission requirements but who would probably be successful in university studies.

Persons who satisfy the foregoing requirements will normally be admitted to a degree if they have:

- (a) secondary school graduation in an academic program with a 60 percent average; or
- (b) completed at Carleton, one appropriate full-course credit with a C- or higher standing, in one attempt; or
- (c) other academic or work experience that, in the opinion of the admissions committee, indicates a likelihood of success at university.

Only Canadian citizens and permanent residents are considered for admission as mature matriculants. Persons who have previously been involved in a university- or college-level program as full-time students are not normally eligible for mature matriculation, regardless of age. They are assessed for admission on the basis of their most recent academic experience.

Mature matriculants are normally considered for admission to the First year of an undergraduate program in Arts, Science or Engineering. However, applicants seeking admission to the Faculty of Science who lack the prerequisites as they are listed on p. 39, may be required to take Qualifying-University-year courses in addition to the regular program. Students in a similar situation in relation to the Faculty of Engineering will not normally be considered until the prerequisites as listed on p. 37 have been completed.

Mature matriculants are not usually considered for admission into an Honours program (e.g. Business, Computer

Science, Journalism) or into Architecture or Industrial Design. However, if the admission requirements for the Honours program are met at the end of the First year of undergraduate study, an application to transfer to the chosen program may be made.

Applicants are required to submit proof of age and biographical information with their application for admission.

Special students at Carleton University who meet the age requirements will be considered for admission as mature matriculants if:

- (a) they have obtained a grade of C- or better in at least one full credit (or equivalent) in one attempt; and
- (b) they are eligible to continue as Special students.

### Admission as a Special Student

Special students may be admitted to degree study upon indicating, through academic achievement at Carleton, a reasonable probability of future academic success. However, previous post-secondary studies will be taken into consideration at the time an application for admission is evaluated. Students with previous, unsuccessful post-secondary studies are encouraged to contact the Office of Admissions before attempting to qualify for admission on the basis of Special studies.

Normally, in the Faculty of Arts and the Faculty of Social Sciences, a Special student will be admitted after passing at least four full credits with a C- standing or higher in at least two full credits or equivalent. Normally, in the Faculty of Science, a Special student will be admitted after passing at least four *approved* full credits with a C- standing or higher in at least two full credits or equivalent.

#### Note:

Students who perform at a higher level may gain admission after fewer courses, i.e. an A- average on two successive full credits or a B- average on three successive full credits.

Special students seeking admission must meet the requirements within the previous six full credits preceding formal application for admission and may not present more than two supplemental or grade-raising examinations in meeting the requirements for admission.

Special students who meet the age requirements for mature matriculation will normally be considered on this basis only if they have obtained a grade of C- or better in at least one full credit (or equivalent) and are eligible to continue as Special students.

### Eligibility to Continue to Register

In order to be eligible for further registration, returning Special students must pass four of their previous six full credits (or equivalent) with a C- standing or higher in at least two full credits (or equivalent).

Without documentation to the contrary, a grade of *Abs* (Absent) is judged equivalent to a grade of *FNS* (Failure, No Supplemental privileges) in determining eligibility for further registration as a Special student.

Students who are required by the University to withdraw from a degree, certificate or diploma program are ineligible to register as Special students for one calendar year. In addition, such students should not normally expect to gain readmission to a degree program on the basis of work completed as a Special student, nor should they expect to retain credit for these courses.



### Special Students Enrolling in Graduate-Level Courses

Anyone may enrol in a graduate level course as a Special student provided he or she receives a letter of permission from the Chairman or Supervisor of Graduate Studies of the appropriate department. Anyone considering a graduate degree is urged to contact the Faculty of Graduate Studies and Research *prior* to registration as a Special student. Special students enrolled in a Graduate level course(s) are subject to Special-student regulations outlined in the Undergraduate Calendar. (See also p. 16.)

### Course Load

Special students may normally enrol in a maximum of two full credits per academic session and no more than the equivalent of two half credits in any one term.

Special students who have completed one or more full credits with an overall C average in all credits taken at Carleton (including failures) may register in the equivalent of three half credits in each term of the Fall/Winter session. Special students studying in the Summer session may register for a maximum of two full credits (or equivalent). This total includes audited courses and those taken during Intersession.

During the Fall/Winter session, Special students may enrol in four or five full credits under any of the following conditions:

1. the student is enrolled full time in a degree program at another institution and can present a Letter of Permission authorized by an appropriate official of the institution; or
2. the student holds an undergraduate degree from a recognized institution and wishes to pursue further study for professional development or in preparation for entry into graduate study.

### Course Change and Course Withdrawal

Special students wishing to make a change in their registration must use the appropriate form provided by the School of Continuing Education.

Course changes must be made by the deadline dates designated in the Academic Year (see pp. 11-12). Changes include additions, withdrawals, section changes, as well as changes of status from credit to audit or vice versa.

Please note that students who are withdrawing from a course or courses, or from the University entirely, must notify the Continuing Education office, either on the specific form designated for that purpose and available from that office or by letter.

The date of withdrawal is the date on which the written notification is received in the Continuing Education office. Fee adjustments will also be calculated as of that date.

The withdrawal, with the date of withdrawal, will be entered on the student's transcript as *Wdn*, which is defined as "Withdrawn in good standing. No academic credit." No academic penalty is attached to this grade.

It is not possible to withdraw from a course(s) or from the University *after* the last date for withdrawal.

For complete details about fee adjustments see pp. 46-47 (Fees).

### Notes:

1. The responsibility for taking all steps necessary for withdrawal rests entirely with the student. Non-attendance

of classes, or informing an instructor of intent to withdraw does *not* constitute withdrawal.

2. A student who withdraws from a course retains no academic credit for any part of that course.

### Course Selection

Persons wishing eventually to be admitted to a degree program are advised to note the specific Faculty requirements for First-year students as they are listed in this Calendar. Special students who have not completed Senior Matriculation or the equivalent may have to upgrade their qualifications by enrolling in courses at the Qualifying-University-year level.

Special students are encouraged to consult directly with departments when selecting specific courses of study or with the School of Continuing Education.

### Supplemental and Special Examination Privileges

Supplemental and/or grade-raising examinations written by Special students will be graded according to the regulations of the Faculty in which the course is given. Supplemental and/or grade-raising examinations are made available at the discretion of the Department or School involved. A Special student registered in one, two or three credits, who fails only one credit, may write supplemental and/or grade-raising examinations to a maximum of one full credit. Supplemental and/or grade-raising examination privileges will not be granted to students who fail more than one full credit.

A Special student registered in four full credits may write supplemental and grade-raising examinations to a maximum of one full credit each, or two full credits of grade-raising examinations.

A Special student registered in five or more full credits may write supplemental and/or grade-raising examinations to a maximum of two full credits.

Supplemental and/or grade-raising examination privileges will not be granted to a full-time Special student who does not pass at least three credits during the Fall/Winter session.

*A Special student who wishes eventually to enrol in a degree program of a Faculty at Carleton University is strongly encouraged to pay particular attention to the supplemental and/or grade-raising examination regulations for that faculty.*

Special students are eligible to write deferred final examinations under the conditions indicated on p. 43.

Special students must make application for supplemental and special examinations at the Continuing Education office by the published deadlines. (See pp. 11-12.)

### Appeals

A Special student has the right to appeal any decision regarding the application or interpretation of academic regulations made by the School of Continuing Education.

Appeals must be made in writing and should be submitted to the Secretary, Special Student Policy and Appeals Committee, c/o School of Continuing Education, Room 302, Administration Building, Carleton University.

### Financial Assistance

Special students interested in obtaining financial assistance are advised to contact the Student Awards Office at 564-3735.

Ontario residents should apply for financial aid from the Ontario Student Assistance Program (OSAP). The program is made up of four individual plans: Ontario Study Grant Plan, Canada Student Loans Plan, Ontario Student Loans Plan and Ontario Special Bursary Plan.

*Ontario Study Grant Plan (OSG)*

This plan can provide grants to assist post-secondary study for up to eight terms. In this way, the grant plan will cover many students for their first four years of full- or part-time post-secondary study. Eligible students can receive this grant without having to borrow money first.

*Canada Student Loans Plan (CSL)*

For qualified applicants, this plan provides an interest-free loan for post-secondary study. To be eligible applicants must be carrying at least 60 percent of a full course load. The amount of loan will be based on calculated financial need.

*Ontario Student Loans Plan (OSL)*

For full-time students whose calculated financial needs are not fully covered by the Canada Student Loans Plan, applications for OSAP assistance may be supplemented automatically by the Ontario Student Loans Plan. This provincial loans plan also helps part-time students, or students enrolled in some short courses that are not covered by the other plans. Students are not obliged to borrow the full amount of the authorized loan.

*Ontario Special Bursary Plan (OSBP)*

The province of Ontario provides non-repayable bursaries to help Ontario students who are on social assistance, are unemployed or have a low family income, and who are taking up to three courses. Students may not, at the same time, receive financial assistance from OSG, CSL or OSL. If eligible for OSBP, the student may receive a bursary to cover tuition and other compulsory fees, book and equipment and local transportation expenses, in addition to a possible supplementary grant towards any additional costs such as babysitting.

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**Transfer Credits to Another University**

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Students who wish to attend Carleton to receive credits toward a degree program taken elsewhere are eligible to register at Carleton as Special students. Such students who wish to exceed the normal course load or attend full-time should write or consult directly with the Registrar of the School of Continuing Education well in advance of the session for which they plan to register.



# Summary of Undergraduate Certificate and Diploma Programs

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## General Information

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In addition to the ten programs leading to bachelor's degrees, Carleton University also offers six undergraduate certificate/diploma programs, each normally requiring satisfactory completion of five or six credits. These programs are summarized below and full details can be found on the appropriate pages, as noted.

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## English Language and Composition (Certificate)

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The Certificate in English Language and Composition program consists of five credits or equivalent. It is intended primarily for practising teachers, and its aim is to upgrade the student's knowledge of the areas of English language and writing theory that underlie the new Ontario guidelines and support documents. For admission requirements, see p. 30. For program requirements, see p. 133.

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## French Language Studies (Certificate)

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The Certificate in French Language Studies program consists of six credits or equivalent. It is designed for students who wish to perfect their spoken and written French. For admission requirements, see p. 30. For program requirements, see p. 146.

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## Law Enforcement Studies (Certificate)

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The Certificate in Law Enforcement Studies program consists of six credits or equivalent. It is designed for persons employed in the areas of law enforcement, national security or corrections. For admission requirements, see p. 30. For program requirements, see p. 195.

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## Music (Diploma)

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The Diploma in Music program consists of five credits or equivalent and a graduating recital (which includes a *viva voce* examination). It is intended for persons with a strong background in performance on a musical instrument or in voice, who are involved in the teaching of music and wish to obtain additional academic qualifications. For admission requirements, see p. 30. For program requirements, see p. 206.

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## Public Service Studies (Certificate)

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The Certificate in Public Service Studies program consists of six credits or equivalent. It is intended primarily for public employees who wish to have special training in public service subjects. For admission requirements, see p. 30. For program requirements, see p. 236.

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## Teaching of English as a Second Language (Certificate)

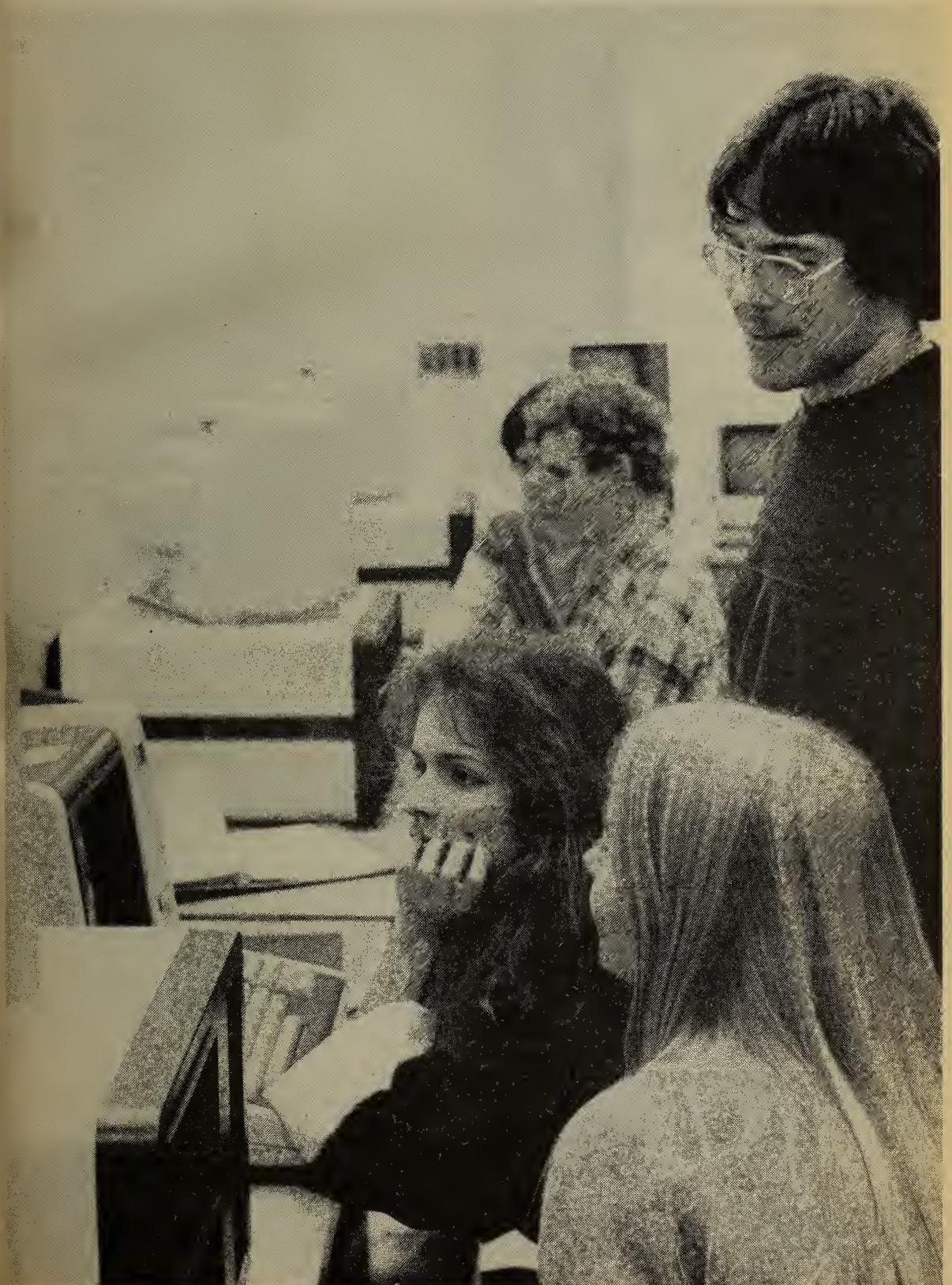
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The Certificate in the Teaching of English as a Second Language (CTESL) program consists of five credits or equivalent, in the theory and practice of teaching English as a second language. It is offered by the Department of Linguistics. For admission requirements, see p. 30. For program requirements, see p. 196.





# School of Computer Science







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## Officers of the School

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### *Director*

J.R. Pugh

### *Professors*

M. Atkinson

F. Fiala

J.E. Neilson

### *Associate Professors*

W.R. LaLonde

B.J. Oommen

F. Oppacher

J.R. Pugh

N. Santoro

D.A. Thomas

### *Assistant Professors*

E.J. Otoo

J.-R. Sack

### *Instructor*

I. Reichstein

### *Registrar*

B.R. Lifeso (*Joint appointment, Faculty of Science*)

### *Research Associate*

J.J. des Rivieres

### *Supervisor of Graduate Studies, Joint M.C.S. Program with the University of Ottawa*

M. Atkinson

### *Sessional Lecturers*

T. Church

D. Hutchinson

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## General Information

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Carleton's Computer Science programs take full advantage of campus-wide computing expertise and computing resources. In addition to courses offered by the School, courses relevant to Computer Science are offered by the Department of Systems and Computer Engineering (Faculty of Engineering), the Department of Mathematics and Statistics (Faculty of Science) and the School of Business (Faculty of Social Sciences).

Computing facilities include the University's central Honeywell Level 66 time-sharing system and a growing number of micro and minicomputer systems devoted to computing instruction. Languages supported include PASCAL, FORTRAN, COBOL, C, LISP, PL/1, PROLOG, SMALLTALK and APL.

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## Carleton Computer Science Undergraduate Society

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The Carleton Computer Science Undergraduate Society (CSUS) is open to all members of the University and exists for the purpose of aiding students in their study of computers and computing at Carleton. Publications and events are produced throughout the year, which are of professional interest to students. Social activities are also organized to ensure a sense of belonging and camaraderie at Carleton.

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## Programs Offered

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The School of Computer Science offers a program leading to the degree of Bachelor of Computer Science (Honours), B.C.S. (Hons.).

In co-operation with the Department of Mathematics and Statistics and the Department of Physics, the school offers combined Honours programs in Computer Science and Mathematics and in Computer Science and Physics leading to the degree of Bachelor of Science (Honours), B.Sc. (Hons.). The School also offers a number of introductory service courses that may stand alone in a program in another field of study, or be augmented by a selection of other Computer Science courses to form an area of specialization.

For details of the Master of Computer Science (M.C.S.) program, please refer to the Calendar of Graduate Studies and Research.

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## Bachelor of Computer Science (Honours), B.C.S. (Hons.) Program

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The Bachelor of Computer Science degree is an Honours program in which candidates are required to complete 20 credits or equivalent, after Senior Matriculation.

In order to provide the student with a choice of specialization, while at the same time ensuring that all relevant topics are covered, the program of studies is designed around a series of core courses combined with a choice of one of five program options. These options are designed to prepare graduates for professional careers in computer-science related occupations or for advanced study at the graduate level.

The program is offered mainly in the Day division. Part-time students will find, however, that some of the courses are also available in the Evening division.

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## Admission Requirements

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### First Year

1. Completion of Qualifying University year in Arts, Engineering or Science, with a grade-point average of 4.0 or better, and including Mathematics 69.006★ and 69.007★; or

2. The Ontario Secondary School Honour Graduation Diploma with a minimum 65% average and including Functions and Calculus. Physics is required for the hardware and scientific applications options and would also be advantageous for students electing the other options.

### Advanced Standing

Applications for admission beyond First year will be assessed on their individual merits. Advanced standing will be granted only for those subjects assessed as being appropriate for the program and for the option elected.

### Mature Matriculation

Persons who lack the normal entrance requirements as published in this calendar may receive consideration for admission under the mature matriculation policy. Applicants will normally have been away from full-time studies for a minimum of two years and must be 21 years of age,

or over, by December 31 of the year in which they wish to enrol. For full details see p. 33.

### Enrolment Limitation

Applicants should note that meeting the admission requirements can only establish eligibility for selection to the School of Computer Science.

### Course Requirements

The program for the degree of Bachelor of Computer Science (Honours) consists of a total of 20 credits, normally five taken each year, including at least seven Computer Science credits, four from Mathematics and Statistics, two from the Faculties of Arts and Social Sciences, and to include at least two credits chosen from 400-level courses.

Because the study of computer science is necessarily structured, students are required to select a course of study from one of five options in addition to those courses of the core program. The options are:

1. Software
2. Hardware
3. Theory of Computing
4. Scientific Applications
5. Management and Business Systems

### Relevant Courses

All courses bearing a 95 prefix carry the designation Computer Science. In addition, the following courses offered by the School of Business and the Faculty of Engineering are relevant to the B.C.S. program, are counted as Computer Science credits and are treated as Computer Science courses in the calculation of grade-point averages. (See also pp. 69-70).

*Business* 42.230★, 42.240★, 42.342★, 42.348★, 42.440★, 42.442★, 42.446★.

*Engineering* 94.303★, 94.310★, 94.405★, 94.433★, 94.457★, 94.461★, 94.480★.

### Core Courses

All students enrolled in the Computer Science degree program are required to complete the following core courses:

#### *First Year*

Mathematics 69.102 and 69.117★;  
Computer Science 95.105★, 95.106★ and 95.102★.

#### *Second Year*

Mathematics 69.208★ and 69.217★;  
Computer Science 95.202★, 95.203★ and 95.204★.

#### *Third Year*

Mathematics 69.311★;  
Computer Science 95.300★, 95.305★, 95.384★ and 95.385★.

#### *Fourth Year*

Computer Science 95.495★.

### Program Options

#### Software Option

This option is intended for students whose interests include the design and implementation of large-scale software systems. Examples of such systems are language processors, operating systems and data management systems. Program requirements for the Software option are:

##### *First Year*

One credit in an experimental science.

##### *Second Year*

Mathematics 69.265★;  
Computer Science 95.207★.

##### *Third and Fourth Years*

One half credit in Mathematics at the 300 level or above; Engineering 94.303★, 94.310★, Computer Science 95.301★, 95.302★;  
Engineering 94.480★; Computer Science 95.484★;  
One additional Computer Science half credit at the 300 level or above; and  
one additional Computer Science half credit at the 400 level.

#### Hardware Option

This option is intended for students seeking to combine an interest in computing with an interest in electronics. It prepares students for careers in the design and construction of both large- and small-scale computer systems. Program requirements for the Hardware option are:

##### *First Year*

Physics 75.100.

##### *Second Year*

Mathematics 69.265★;  
Computer Science 95.206★;  
Engineering 97.251★.

##### *Third Year*

One half credit in Mathematics at the 300 level or above; Engineering 94.303★, 94.310★, 97.357★.

##### *Fourth Year*

Engineering 94.461★ and 94.480★;  
Two Engineering or Computer Science half credits at the 300 level or above.

#### Theory of Computing Option

This option is intended for students with an interest in the theoretical aspects of computer science. While retaining a good number of practical courses, the option emphasizes the theoretical aspects, thus providing the student with a sound foundation for graduate studies. Program requirements for the Theory of Computing option are:

##### *First Year*

One credit in an experimental science.

##### *Second Year*

Mathematics 69.265★;  
One of Computer Science 95.206★ or 95.207★.

##### *Third Year*

Two of Computer Science 95.301★, 95.302★ or 95.386★;  
One Computer Science half credit at the 200 level or above.

##### *Fourth Year*

One of Mathematics 70.482★, Computer Science 95.483★ or 95.486★;



Computer Science 95.484★ and 95.485★;  
Three Computer Science half credits at the 300 level or above.

### Scientific Applications Option

This option is intended for students whose interest in computers centres around the applications of computers to science. It provides a strong framework of Computer Science courses to which additional Science courses may be added. Program requirements for the Scientific Applications option are:

#### First Year

Physics 75.100.

#### Second Year

One of Computer Science 95.206★, or 95.207★.

#### Third Year

Mathematics 70.260;

Engineering 94.303★;

Computer Science 95.386★.

#### Fourth Year

Engineering 94.480★;

Two of Engineering 94.405★, Computer Science 95.387★, 95.484★, or 95.486★;

Three Science or Computer Science half credits (or equivalent) at the 200 level or above.

### Management and Business Systems Option

This option is intended for students whose interests include the application of computers to business. It is designed to prepare students for the careers in this field, with a combination of Computer Science courses and a strong component of courses selected from those offered by the School of Business. Program requirements for the Management and Business Systems option are:

#### First Year

Business 42.101★ and 42.102★;

Economics 43.100.

#### Second Year

Business 42.230★, 42.240★, 42.250★;

Mathematics 69.257★.

#### Note:

The core course Computer Science 95.204★ may be deferred until the Third year.

#### Third Year

Business 42.214★, 42.342★, 42.348★.

#### Fourth Year

Two half credits in business at the 400 level;

One of Mathematics 69.351 or Computer Science 95.386★;

Computer Science 95.403★;

One Computer Science half credit at the 400 level.

### Counselling and Program Approval

Every student in the Bachelor of Computer Science degree program will be assigned a full-time faculty member who will act as a program adviser. Students are expected to seek counsel from their assigned advisers in such matters as selecting options and choosing elective courses. The advisers are responsible for approving both programs and course changes.

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### Combined Honours B.Sc. Programs

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A Combined Honours program must include a minimum of six credits in Computer Science. These requirements can be satisfied as follows:

#### Computer Science and Mathematics

Students in this program follow the prescribed Combined Honours B.Sc. program outlined on p. 368. The program features equal emphasis on Mathematics and Computer Science.

#### Computer Science and Physics

Students in this program follow the prescribed Combined Honours B.Sc. program outlined on p. 383. The program features equal emphasis on Physics and Computer Science.

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### Introductory Courses

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Of the seven 100-level half courses offered in Computer Science, five are entry-level courses, viz., Computer Science 95.100★, 95.101★, 95.103★, 95.105★ and 95.140★. The remaining, viz., Computer Science 95.102★ and 95.106★, are second-level courses and should not be attempted unless one of the entry-level courses has been successfully completed.

With respect to the entry-level courses, students are expected to take only one. Specifically, students in the B.C.S. program or in a combined computer science program should note that credit will not be given for more than one of Computer Science 95.100★, 95.101★, 95.103★, 95.105★ or 95.140★. In selecting an entry-level course, students should take into account the following:

1. Computer Science 95.100★ is designed specifically for Arts students and may not be taken for credit by students in Computer Science, Science or Engineering.
2. Computer Science 95.101★ is designed specifically for Social Science students and may not be taken for credit by students in Computer Science, Science or Engineering.
3. Computer Science 95.103★ is designed specifically for Science students and requires a sound preparation in mathematics.
4. Computer Science 95.105★ and 95.140★ are special entry-level courses designed specifically for students in Computer Science and Business, respectively. These are not stand-alone courses and should, therefore, not be chosen by students who are not committed to further studies in these disciplines.

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### Computer Science Course Selection

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The following table is designed primarily for B.C.S. students, to assist in both option and course selection. Since it is organized by specialization option, the table will also be useful to students in Combined Honours programs as well as to students seeking a concentration in Computer Science within some other degree program. The table contains only Computer Science courses beyond the 100 level.

Notes:

1. This chart does not show 100-level courses. See section entitled *Introductory Courses*, p. 63.

2. This chart does not include relevant courses offered by the School of Business or the Faculty of Engineering. A list of these courses can be found in the section entitled *Relevant Courses*, pp. 69-70.

Course Selection (and see notes, above)

Legends:

- X - required course
- 0 - specified optional course
- ★ - unspecified course of particular interest

Course	Option				
	Software	Hardware	Theory of Computing	Scientific Applications	Management and Business Systems
95.202 ★ Data Structures and Data Types	X	X	X	X	X
95.203 ★ Computer Organization	X	X	X	X	X
95.204 ★ Scientific and Business Applications	X	X	X	X	X
95.206 ★ Digital Logic	★	X	0	0	
95.207 ★ Programming Language Concepts	X	★	0	0	★
95.300 ★ Operating Systems	X	X	X	X	X
95.301 ★ Concurrent Programming	X	★	0	★	★
95.302 ★ Compiler Construction	X	★	0	★	
95.305 ★ Database Management Systems	X	X	X	X	X
95.306 ★ Microprocessor Interfacing	★	★		★	
95.384 ★ Data Structures and Algorithm Analysis	X	X	X	X	X
95.385 ★ Discrete Structures and Applications	X	X	X	X	X
95.386 ★ Numerical Analysis	0	0	X	X	0
95.387 ★ Mathematical Software	★		★	0	
95.402 ★ Computer Graphics	★	★		★	★
95.403 ★ Transaction Processing Systems	★	★			X
95.404 ★ System Software	★	0		★	★
95.405 ★ A First Course in Robotics and Computer Vision	★	★	★	★	
95.407 ★ Applied Artificial Intelligence	★		★		
95.483 ★ Topics in Applied Logic			0		
95.484 ★ Design and Analysis of Algorithms	X	★	X	0	★
95.485 ★ Theory of Automata	★		X		
95.486 ★ Numerical Analysis			0	0	
95.490 ★ Advanced Topics in Computer Science	★	★	★	★	★
95.491 ★ Directed Studies	★	★	★	★	★
95.495 ★ Honours Project	X	X	X	X	X



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**Academic Standing**


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**Grading System**

Standing in courses will be shown by alphabetical grades. The grades used, with their corresponding grade points, are as follows:

<b>A+</b>	<b>12</b>	<b>B+</b>	<b>9</b>
<b>A</b>	<b>11</b>	<b>B</b>	<b>8</b>
<b>A-</b>	<b>10</b>	<b>B-</b>	<b>7</b>
<b>C+</b>	<b>6</b>	<b>D+</b>	<b>3</b>
<b>C</b>	<b>5</b>	<b>D</b>	<b>2</b>
<b>C-</b>	<b>4</b>	<b>D-</b>	<b>1</b>

Standings to represent special circumstances are as follows:

**Aeg**

Pass standing granted although absent from final examinations. Aegrotat standing is granted only by the School of Computer Science Committee on Admission and Studies in response to a student's written request. It will be granted only in exceptional circumstances and if the term work has been of high quality.

**F**

Failure. No academic credit.

**FNS**

Failure, but with supplemental privileges withdrawn because of unsatisfactory term work or an unacceptably low mark in the examination. No academic credit.

**Wdn**

Withdrawn in good standing. No academic credit.

**Abs**

Failure due to absence from the final examination where the necessary term work has been completed. No supplemental privileges. No academic credit.

**Def**

Students who are absent from final examinations or who are unable to complete their course work for medical or compassionate reasons may apply to the School of Computer Science Committee on Admission and Studies for deferred examination privileges.

**IP**

In progress.

**Computation of Averages**

Using the 12-point system set out above, the grade points earned in any specific course are determined by multiplying the grade points corresponding to a grade by the credit value of the course. Grade-point averages are calculated by dividing the total accumulated grade points by the total credits. Overall averages are calculated on the grades earned in all courses applicable to the degree. Computer Science grade-point averages involve only those courses listed or cross-listed as Computer Science and those courses offered by the School of Business and the Faculty of Engineering that are counted as Computer Science credits. A list of these courses can be found in the section entitled *Relevant Courses*, p. 62.

Unless otherwise indicated, courses are one full credit, indicated 1.0 on all record documents. Courses marked ★ are half-credit courses, indicated 0.5 on documents.

**Course Load**

The normal course load for a full-time student in the School of Computer Science, during the Fall/Winter session, is the equivalent of five credits. The normal maximum course load for a part-time student, in the Fall/Winter session, is the equivalent of two credits.

Students may register for a maximum of two credits in the Summer session.

A student in good standing may exceed the normal course load only with the recommendation of the Director of the School of Computer Science.

**Promotion from First Year**

Full-time students in First year, in order not to fail their year in May, must, by then, have passed at least three credits or equivalent. To be promoted to the course-credit system, a full-time student must pass, by the end of August, at least four credits from the First year of his or her chosen option, including at least one credit in Computer Science, with a grade-point average of 6.5 or better in Computer Science courses and at least 5.0 overall. (Grade-point averages are to include any failing grades.) Part-time students must meet the same grade-point standards and pass at least four of the first six approved credits attempted.

For all students, promotion to the course-credit system must be accomplished in not more than three calendar years from the date of first registration in the B.C.S. program.

A student who fails to meet these promotion requirements is deemed to have failed First year and must forfeit credit for courses with grades of less than C- and is required to withdraw from the B.C.S. program. Such students are eligible to re-apply for admission and, if admitted, will repeat First year without encumbrances, retaining credit towards their degree (but not towards completion of First year) for all courses graded C- or better. A student who fails First year a second time forfeits his or her undergraduate status in the B.C.S. program and is ineligible for any further registration in the B.C.S. program.

**Course Credit System**

Students meeting promotion requirements at the end of First year will proceed on the course-credit system. Under this system there is no promotion from one year to the next.

After promotion to the course-credit system a student may accumulate a maximum of three credits in supplemental examinations, grade-raising examinations, repeated courses, course replacements.

To continue in the B.C.S. program a student must, by the end of August each year, have gained credit in the past 12 months towards the B.C.S. degree and have a cumulative grade-point average of 6.5 or better in Computer Science courses and 5.0 or better overall. (Grade-point averages are to include any failing grades.) Failure to comply with these standards requires withdrawal from the program. Such students may, however, be eligible to transfer into another degree program. Guidance of the Registrar of the School of Computer Science should be sought in such cases.

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## Examinations

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General regulations on examinations are on p. 43. In addition, the following regulations apply to students in the B.C.S. program.

### Supplemental Examinations

Students may request a supplemental examination in a course graded *F*. Application to write supplemental examinations must be made at the School of Computer Science Registrar's Office by the designated date.

### Deferred Examinations

Students unable to write a final examination because of illness or for compassionate reasons may apply within one week after the final examination to the School of Computer Science Registrar's Office for permission to write a deferred examination. Permission can be granted only if the absence is fully and specifically supported by a medical certificate or other documents.

### Grade-Raising Examinations

A student may apply to the School Registrar's Office to write a grade-raising examination in a course already passed. The grade received on this examination will supersede the previous grade whether it is higher or lower.

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## Graduation

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### University Graduation Requirements

See p. 42.

### Application to Graduate

Students expecting to graduate in the Spring must make application on the form available in the School Registrar's Office by February 1; those expecting to graduate in the Fall, by September 1; and those expecting to graduate in February, by December 1.

### Graduation Requirements

To qualify for graduation with a Bachelor of Computer Science degree with Honours a student must:

1. present at least 20 approved credits beyond Qualifying University year, including at least 13 credits at the 200 level or higher;
2. meet the program requirements of the School of Computer Science for at least one of the B.C.S. program options;
3. meet the minimum grade-point standards for Honours as stated below;
4. complete the program within seven calendar years of the entry to the course credit system;
5. be recommended by the School Council and the Faculty Board of the School of Computer Science.

### Designations of Honours Degrees

Three designations of Honours are awarded, determined on the basis of the grade-point average as follows:

#### *Highest Honours*

10.0 - 12 in Computer Science courses, and  
8.0 or better overall

#### *High Honours*

9.0 or better in Computer Science courses, and  
7.0 or better overall

#### *Honours*

6.5 or better in Computer Science courses, and  
5.0 or better overall

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## Courses Offered

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Some of the following Computer Science courses are cross-listed from other parts of the calendar. In every such case, only one course is actually offered and the two numbers are alternate identifiers for this single course. Students in the B.C.S. program should register in such a course under the Computer Science (95) number.

#### *Note:*

In all courses with programming assignments, students usually find it necessary to be on campus at other than the scheduled lecture periods to make use of computing facilities.

#### Computer Science 95.100★

##### **Introduction to Computers for the Humanities**

This course is intended to give students in the humanities a working knowledge of computers and their uses: computer fundamentals; use of computing facilities; programming in a high level language; uses of computers in the humanities; information management.

Precludes additional credit for Computer Science 95.101★.

This course cannot be taken for credit by students in Engineering, Science, or Computer Science.

Day division, Fall term: Lectures three hours a week.

#### Computer Science 95.101★

##### **Introduction to Computers for the Social Sciences**

This course is intended to give students in the social sciences a working knowledge of computers and their uses: computer fundamentals; use of time-sharing facilities. Programming in a high level language.

Precludes additional credit for Computer Science 95.100★. This course cannot be taken for credit by students in Engineering, Computer Science or Science. Day division, Fall term; Day and Evening divisions, Winter term: Lectures three hours a week.

#### Computer Science 95.102★

##### **Introduction to Computers**

This course is designed to introduce the student to the organization and operation of computer systems. Concepts of machine and assembly languages are explained. Lectures and programming exercises cover such topics as: addressing modes, subroutine calling conventions, internal data representation.

Prerequisite: One of Computer Science 95.101★, 95.103★, 95.105★ or 95.140★.

Day division, Fall term; Day and Evening divisions, Winter term: Lectures three hours a week.

#### Computer Science 95.103★

##### **Introduction to Scientific Computing**

A first course in computer programming primarily for students in the Faculty of Science. Introduction to computers and algorithms. Use of the Carleton time-sharing system. Introduction to FORTRAN programming through examples taken from mathematics and science. Basic procedures: summing, sorting, looping. Iterative solutions to problems. Non-numeric programming. Random num-



bers. Simulation of simple physical systems. The computer system: inside the computer. Use of the batch system. Efficient and structured programming. Precludes additional credit for Engineering 94.165.

Prerequisites: One of Mathematics 69.107★, 69.117★, 69.127★, 69.102, 69.112, which may be taken concurrently.

Day and Evening divisions, Fall term; Evening division, Winter term: Lectures three hours a week.

#### Computer Science 95.105★

##### **Introduction to Programming**

A first course in computer programming designed for students who wish to specialize in Computer Science. The emphasis is on a structured approach to the design of programs. The language of instruction is PASCAL. Topics include: programming style, documentation and testing, and a variety of non-numeric applications — text formatting, graphical techniques.

Precludes additional credit for Engineering 94.165.

Day and Evening divisions, Fall term; Day division, Winter term: Lectures three hours a week and one hour tutorial.

#### Computer Science 95.106★

##### **Computer Applications**

A continuation of Computer Science 95.105★ designed to give students more programming experience. Applications of computers to various problems using PASCAL including both non-numeric and numeric techniques. Topics include: sorting and searching, linked lists, binary trees, recursion, solution of equations, integration, interpolation and approximation.

Prerequisite: Computer Science 95.105★, or alternatively one of Business 42.140★, Computer Science 95.101★, 95.103★ and a rudimentary knowledge of PASCAL plus a 100-level course in calculus, which may be taken concurrently.

Evening division, Fall term; Day and Evening divisions, Winter term: Lectures three hours a week.

#### Computer Science 95.140★

##### **Introduction to Computers for Business Students**

An introduction to the use of computers in problem solving and data processing. Algorithms for file handling, report generations, elementary numerical computations in business. Information flows within business, fundamentals of programming for business applications. Students will prepare and execute interactive programs to solve problems in the course. (Also listed as Business 42.140★).

Precludes additional credit for Computer Science 95.100★ and 95.101★.

Prerequisite: Mathematics 69.109★ or equivalent (grade of C- or better).

Day division, Winter term: Lectures three hours a week.

#### Computer Science 95.202★

##### **Data Structures and Data Types**

A course designed to provide in-depth experience in the design and construction of computer programs involving data structures. The language of instruction is PASCAL. The data structures, including stacks, queues, lists, trees and records are presented from the viewpoint of the advanced programming concept known as a data type.

Precludes additional credit for Engineering 94.202★.

Prerequisite: Computer Science 95.106★.

Day division, Fall and Winter terms: Lectures three hours a week.

#### Computer Science 95.203★

##### **Computer Organization**

A thorough treatment of computer system organization. Micro, mini and mainframe architectures. Instruction sets and addressing modes. Input/output methods and devices. Micro-coded interpreters. Operating system functions, virtual I/O and memory management techniques.

Prerequisite: Computer Science 95.102★ or Engineering 94.165.

Day division, Fall and Winter terms: Lectures three hours a week.

#### Computer Science 95.204★

##### **Scientific and Business Applications**

This course provides a quick-paced introduction to FORTRAN and COBOL applications programming and to software design techniques. The course is intended for Computer Science students who have developed programming skills in PASCAL, but who are not yet familiar with FORTRAN and/or COBOL. The course is professionally oriented and stresses the need for the students to be able to function in a real-world programming environment. While the course uses the FORTRAN and COBOL languages, its major purpose is to expose students to techniques for the design and implementation of fairly large applications programs.

Prerequisite: Computer Science 95.106★.

Day division, Fall and Winter terms: Lectures three hours a week.

#### Computer Science 95.206★

##### **Digital Logic**

Fundamental concepts in digital logic; Boolean algebra, gates, flip-flops, combinatorial networks, fundamentals of minimization, sequential finite state machines, counters, and registers.

Precludes additional credit for Engineering 94.367★.

Prerequisite: Computer Science 95.102★.

Day division, Winter term: Lectures three hours a week, laboratory three hours a week.

#### Computer Science 95.207★

##### **Programming Language Concepts**

This course provides students with an introduction to the study of programming languages. It emphasizes language semantics, enabling a study of the fundamental differences and similarities of several important programming languages (e.g. ADA, LISP, PROLOG and SMALLTALK) to be made.

Prerequisite: Computer Science 95.202★.

Day division, Winter term: Lectures three hours a week.

#### Computer Science 95.300★

##### **Operating Systems**

System organization; resource management; taxonomy of operating systems. Memory management: static and dynamic relocation, virtual memory, working set model. Processor management: concurrency, communication, synchronization. Device management, file management, protection, performance. Advanced concepts.

Precludes additional credit for Engineering 94.401★.

Prerequisite: One of Computer Science 95.202★ or Engineering 94.202★, and one of Computer Science 95.203★ or Engineering 94.303★.

Day division, Fall term: Lectures three hours a week.

Computer Science 95.301★

**Concurrent Programming**

Sequential processing, coroutines and backtracking are introduced as special cases of concurrent processing. The more general concept is then investigated. Topics include the process concept, low-level and high-level process synchronization primitives, Petri nets, message passing, data-driven versus control-driven program execution. Emphasis is placed on applications in such areas as the parallel evaluation of expressions, real-time transactions systems, fault-tolerant computing and operating systems.

Prerequisite: Computer Science 95.300★.

Day division, Winter term: Lectures three hours a week.

Computer Science 95.302★

**Compiler Construction**

The structure, organization and design of the phases of a compiler are considered: lexical translators, syntactical translators, scope handlers, type checkers, code generators and optimizers. Components of a compiler will be implemented for a suitable simple subset of a PASCAL-like language.

Prerequisite: Computer Science 95.202★ or permission of the School.

Day division, Winter term: Lectures three hours a week.

Computer Science 95.305★

**Database Management Systems**

Introduction to database concepts. Data models: hierarchical, network, relational, infological, entity-relationship, binary logical association. Data description languages; query facilities. The relational model: relational algebra, relational calculus, normalization. Implementation issues. Security, integrity, reliability. Advanced concepts. Use will be made of available DBMSs.

Precludes additional credit for Engineering 94.304★.

Prerequisite: One of Computer Science 95.202★ or Engineering 94.202★, and one of Computer Science 95.204★ or Engineering 94.303★.

Day division, Winter term: Lectures three hours a week.

Computer Science 95.306★

**Microprocessor Interfacing**

A laboratory-oriented course to acquaint students with the design and construction of small-scale microprocessor-based systems. Topics to be covered include: micro-computer structures, microprocessor selection, memory designs and interfaces, I/O devices and interfaces, micro-processor bus standards, serial standards, integration of hardware and firmware, microcontrollers and A/D conversion. Lectures are augmented by laboratory periods providing practical, hands-on experience in micro-processor interfacing.

Precludes additional credit for Engineering 94.461★.

Prerequisites: Computer Science 95.203★ and 95.206★ or equivalent.

Not offered 1986-87.

Computer Science 95.384★

**Data Structures and Algorithm Analysis**

Review of basic data structures such as stacks, queues and lists. Algorithms for their implementation. Representation of arrays, sets and relations. Trees and graphs — representation and applications. Basic techniques of design and analysis of efficient algorithms for sorting and searching. Hashing, dynamic storage allocation, garbage collection. (Also listed as Mathematics 69.384★.)

Prerequisites: A 200-level Mathematics course and Computer Science 95.202★.

Day division, Fall and Winter terms: Lectures three hours a week.

Computer Science 95.385★

**Discrete Structures and Applications**

Algebraic structures; lattices, Boolean algebra; elements of the theory of directed and undirected graphs; combinatorics; Polya theory of enumeration languages over an alphabet; switching circuits, optimization and complete design, algebraic codes, flow charts, connectivity, minimal paths. (Also listed as Mathematics 70.385★.)

Precludes additional credit for Mathematics 70.310.

Prerequisite: One of Mathematics 69.218★, 70.210 or 69.311★.

Day division, Fall and Winter terms: Lectures three hours a week and one hour tutorial.

Computer Science 95.386★

**Numerical Analysis**

Elementary discussion of error, polynomial interpolation, quadrature, linear systems of equations and matrix inversion, non-linear equations, difference equations and ordinary differential equations. (Also listed as Mathematics 69.386★.)

Prerequisites: Computer Science 95.103★ or 95.106★, Mathematics 69.102 or 69.207★ (or 69.201 or 69.202) and 69.112 or 69.217★.

Evening division, Fall term: Lectures three hours a week and one hour tutorial.

Computer Science 95.387★

**Mathematical Software**

Incorporation of basic numerical methods into efficient, reliable software. The course includes examination of existing software systems, e.g. linear systems, non-linear systems, optimization, or differential equations. (Also listed as Mathematics 69.387★.)

Prerequisite: Computer Science 95.386★.

Day division, Winter term: Lectures three hours a week and one hour tutorial.

Computer Science 95.402★

**Computer Graphics**

This course is designed to give students an introduction to the basic principles and techniques of computer graphics: Overview of graphics hardware, techniques for defining images; point, vector and raster approaches. Image transformations; scaling, translation, rotations, clipping, windowing. Graphics software and data structures. Input devices and techniques for interactive graphics. Raster graphic systems. An introduction to three-dimensional graphics; transformations, perspective, hidden line removal. Applications of computer graphics. Prerequisites: Computer Science 95.384★ or both Engineering 94.202★ and 94.303★.

Day division, Fall term: Lectures three hours a week.

Computer Science 95.403★

**Transaction Processing Systems**

This course investigates the design and implementation of on-line data base intensive transaction processing systems. The functional components of a transaction processing system are examined, tracing the transaction flow from user terminal input to user terminal response. Case studies of current systems are used to illustrate design alternatives and implementation techniques. Topics covered in the course include: data entry — the user/terminal interface; teleprocessing — the terminal/host interface; TP monitors — the operating system/application interface; transaction design; journaling and recovery.



**Prerequisites:** Two of Computer Science 95.204★, 95.305★, Engineering 94.304★.  
**Day division, Fall term:** Lectures three hours a week.

Computer Science 95.404★

### **Systems Software**

A thorough examination of system software from the user and designer points of view: user interfacing, command interpreters, software production tools, data communications, file management. Examples are drawn from, and extensive practical use is made of, two popular computer systems: CP/M and Unix.

**Prerequisite:** Computer Science 95.300★ or both Engineering 94.202★ and 94.303★.

**Day division, Winter term:** Lectures three hours a week.

Computer Science 95.405★

### **A First Course in Robotics and Computer Vision**

This course introduces students to the computer science aspects of robotics and computer vision. The course initially deals with the fundamental concepts of a robotic system and concentrates on the various aspects of programming such a system. A comparative study of various robot programming languages is made, and, in particular, the students learn the robot programming languages VAL-II and AL. The course also tackles the Find Space problem and Find Path (The Piano Movers) problem in both two and three dimensions. The course also introduces students to concepts in computer vision such as boundary tracking, depth finding and edge detecting.

**Prerequisites:** Computer Science 95.202★, Mathematics 69.208★ and Physics 75.100.

**Day division, Winter term:** Lectures three hours a week.

Computer Science 95.407★

### **Applied Artificial Intelligence**

Reviews LISP and advanced LISP programming techniques. Introduces practical tools and techniques used in artificial intelligence applications, e.g. discrimination nets, heuristic search, deductive information retrieval, question answering techniques, problem reduction, story generations, knowledge representation. The objective of the course is to produce working demonstration programs.

**Prerequisite:** Computer Science 95.207★.

**Day division, Fall term:** Lectures three hours a week.

Computer Science 95.483★

### **Computable Functions**

Recursive functions and computability, algorithms, Church's thesis, Turing machines, computational logic. (Also listed as Mathematics 70.483★.)

**Prerequisite:** Mathematics 70.210 or Computer Science 95.385★ or permission of the School.

**Day division, Winter term:** Lectures three hours a week.

Computer Science 95.484★

### **Design and Analysis of Algorithms**

Design techniques: divide-and-conquer, backtracking, dynamic programming, search methods. Algorithms for graph problems, optimization problems, algebraic problems. Lower bounds and the P-NP question. (Also listed as Mathematics 70.484★.)

**Prerequisite:** Computer Science 95.384★ or permission of the School.

**Day division, Fall term:** Lectures three hours a week.

Computer Science 95.485★

### **Theory of Automata**

Finite automata and regular expressions, properties of

regular sets, context-free grammars, pushdown automata, deterministic context-free languages. Turing machines, the Chomsky hierarchy. Undecidability, intractable problems. (Also listed as Mathematics 70.485★.)

**Prerequisite:** Computer Science 95.385★ or Mathematics 70.310 or permission of the School.

**Day division, Fall term:** Lectures three hours a week.

Computer Science 95.486★

### **Numerical Linear Algebra**

Study of matrix inversion techniques; techniques of finding eigenvalues and eigenvectors, solution of systems of linear equations; direct and indirect methods, their comparison and error analysis; applications in optimization and other areas. (Also listed as Mathematics 70.486★.)

**Prerequisites:** Mathematics 69.217★; and 69.309★ or permission of the School.

**Day division, Winter term:** Lectures three hours a week.

Computer Science 95.490★

### **Advanced Topics in Computer Science**

Selected topics in Computer Science offered by members of the School of Computer Science.

**Prerequisite:** Permission of the school.

**Day division, Fall and Winter terms:** Lectures three hours a week.

Computer Science 95.491★

### **Directed Studies**

A course of independent study under the supervision of a member of the School of Computer Science, open only to students in the B.C.S. program. Students are required to obtain their supervisor's written approval prior to registration and are limited to two such courses in their programs.

**Prerequisite:** Permission of the School of Computer Science.

Computer Science 95.495★

### **Honours Project**

As part of the Fourth-year program, each B.C.S. student is required to select and complete a major project in computer science. Students are required to submit written project proposals to the Honours Project Co-ordinator for approval on or before November 1 of their final academic year.

**Prerequisite:** Registration in either the Bachelor of Computer Science program or one of the Combined Honours programs involving Computer Science and the permission of the School.

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## **Other Relevant Courses Offered**

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The following courses are not offered by the School of Computer Science but are relevant to the study of computer science. They may be taken for credit as computer science courses in the B.C.S. program and the combined programs with computer science. For full descriptions of these courses please refer to the Calendar entries of the School of Business and the Department of Systems and Computer Engineering.

### ■ **Courses Offered by the School of Business:**

Business 42.230★

**Introduction to Management Science**

Business 42.240★  
**Business Information Systems**

Business 42.342★  
**Business Systems I**

Business 42.348★  
**Quantitative Applications of Computers in Business**

Business 42.440★  
**Management Information Systems**

Business 42.442★  
**Business Systems II**

Business 42.446★  
**Decision Support Systems**

■ **Courses Offered by the Faculty of Engineering**

Engineering 94.303★  
**Real-Time Computing Systems**

Engineering 94.310★  
**Systems Analysis**

Engineering 94.405★  
**Discrete Simulation and its Applications**

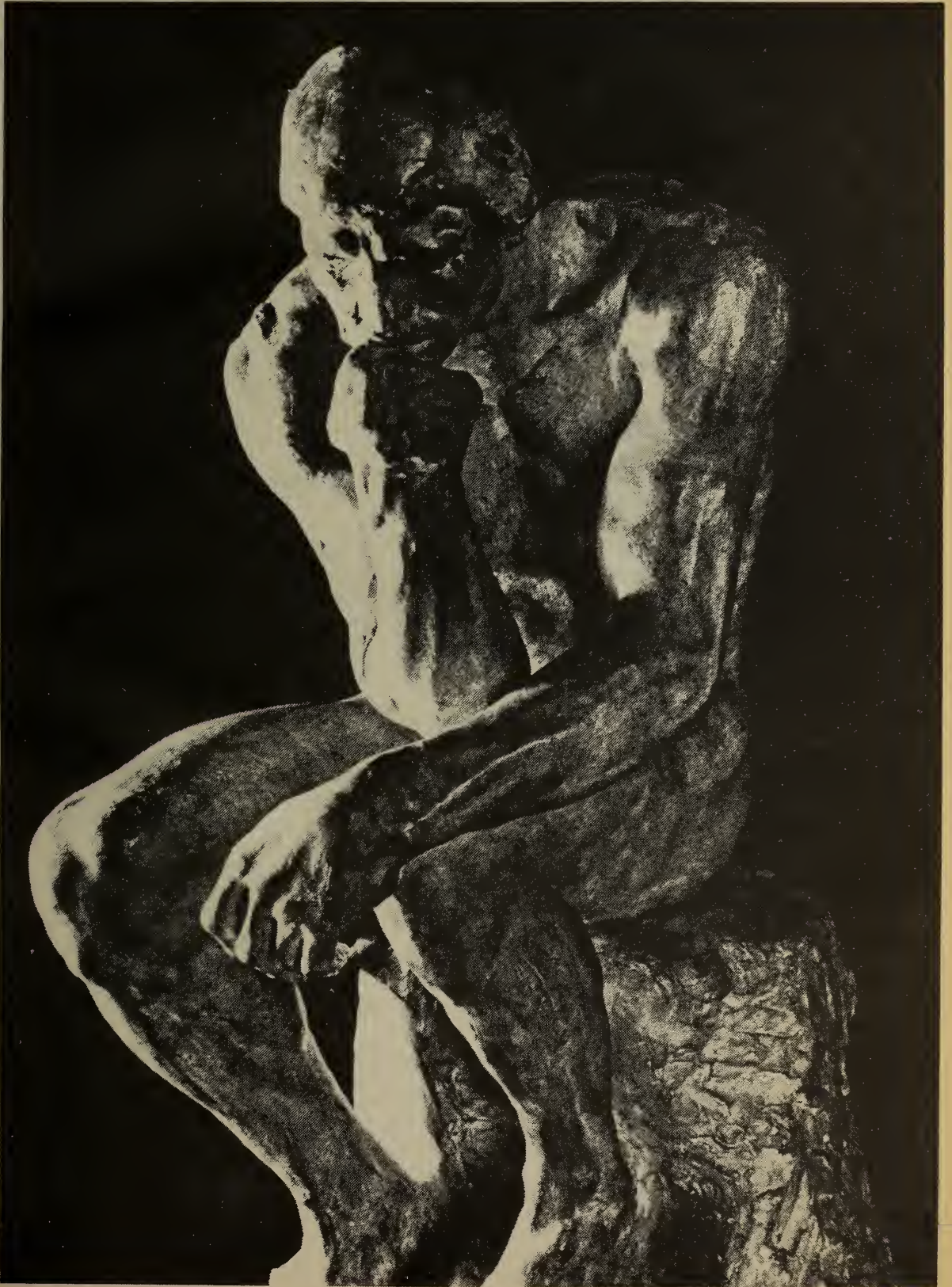
Engineering 94.433★  
**Advanced Real-Time Programming**

Engineering 94.457★  
**Introduction to the Architecture of Computer Systems**

Engineering 94.461★  
**Microprocessor Systems**

Engineering 94.480★  
**Software Engineering**









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## Officers of the Faculty

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*Dean*  
N.E.S. Griffiths

*Associate Dean*  
A. Westell

*Registrar*  
C.E. Dence

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## Directory of Offices

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Office of the Dean,  
2009 Arts Tower, 564-3760

Office of the Associate Dean,  
2011 Arts Tower, 564-2767

Registrar's Office,  
312 Paterson Hall, 564-6690

Applied Language Studies, R.G. Laird, Acting Director,  
215 Paterson Hall, 564-6612

Art History, M. Marshall, Chairman,  
2201 Arts Tower, 564-7156

Canadian Studies, Co-ordinator to be announced,  
1116 Arts Tower, 564-2877

Classics, Chairman to be announced,  
2015 Arts Tower, 564-3740

Comparative Literature\*, A.T. Tolley, Chairman,  
1726 Arts Tower, 564-2894

Directed Interdisciplinary Studies, F. Cherry,  
Co-ordinator,  
3A46 Paterson Hall, 564-6342

English Language and Literature, A.D. McLay, Chairman,  
1812 Arts Tower, 564-3847

English as a Second Language,  
see Applied Language Studies, 564-6612

Film Studies, G. McKnight, Chairman,  
427 St. Patrick's Building, 564-6755

Fine Arts, M. Langer, Co-ordinator,  
429 St. Patrick's Building, 564-6755

French, J. Kealey, Chairman,  
1602 Arts Tower, 564-3754

German, R.D. Gould, Chairman,  
1315 Arts Tower, 564-2605

History, R.C. Elwood, Chairman,  
400 Paterson Hall, 564-2777

Italian, M. Ciavolella, Chairman,  
1427 Arts Tower, 564-2881

Journalism, G.S. Adam, Director,  
346 St. Patrick's Building, 564-5530

Labour Studies, F. Griezic, Co-ordinator,  
414 Paterson Hall, 564-6356

Linguistics, J. Rakušan, Chairman,  
215 Paterson Hall, 564-5573

Mass Communication, J. Weston, Associate Director,  
307 St. Patrick's Building, 564-5530

Medieval Studies, D. le Berrurier, Co-ordinator,  
2209 Arts Tower, 564-7519

Music, B. Gillingham, Chairman,  
A927 Loeb Building, 564-3633

Philosophy, Andrew Jeffrey, Chairman,  
2102 Arts Tower, 564-3868

Religion, L. Librande, Chairman,  
2116 Arts Tower, 564-3863

Russian, A. Lewinson, Chairman,  
1306 Arts Tower, 564-2888

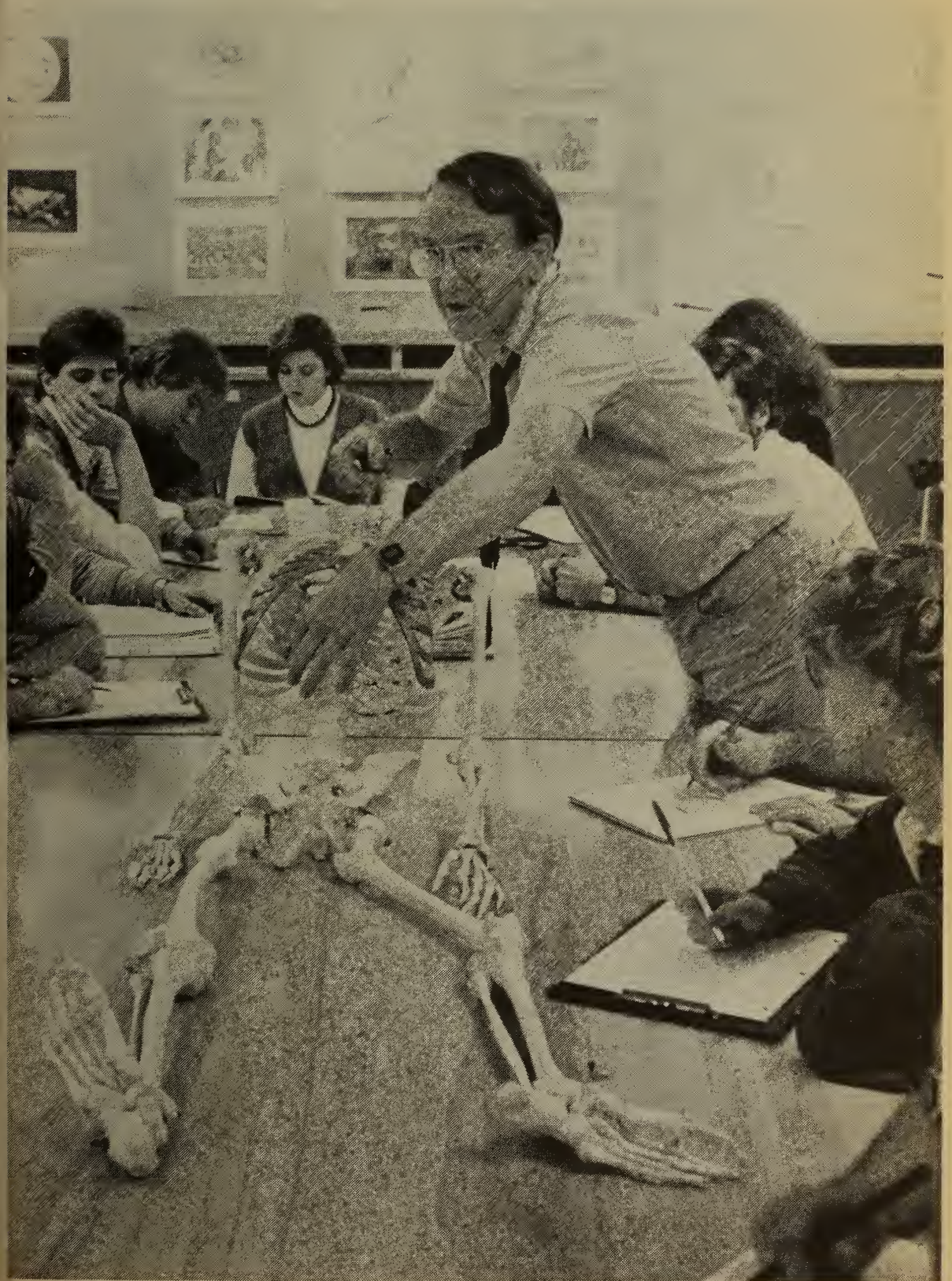
Spanish, R. Larson, Chairman,  
1419 Arts Tower, 564-2865

Women's Studies, E. Saunders, Co-ordinator,  
331 St. Patrick's Building, 564-5530

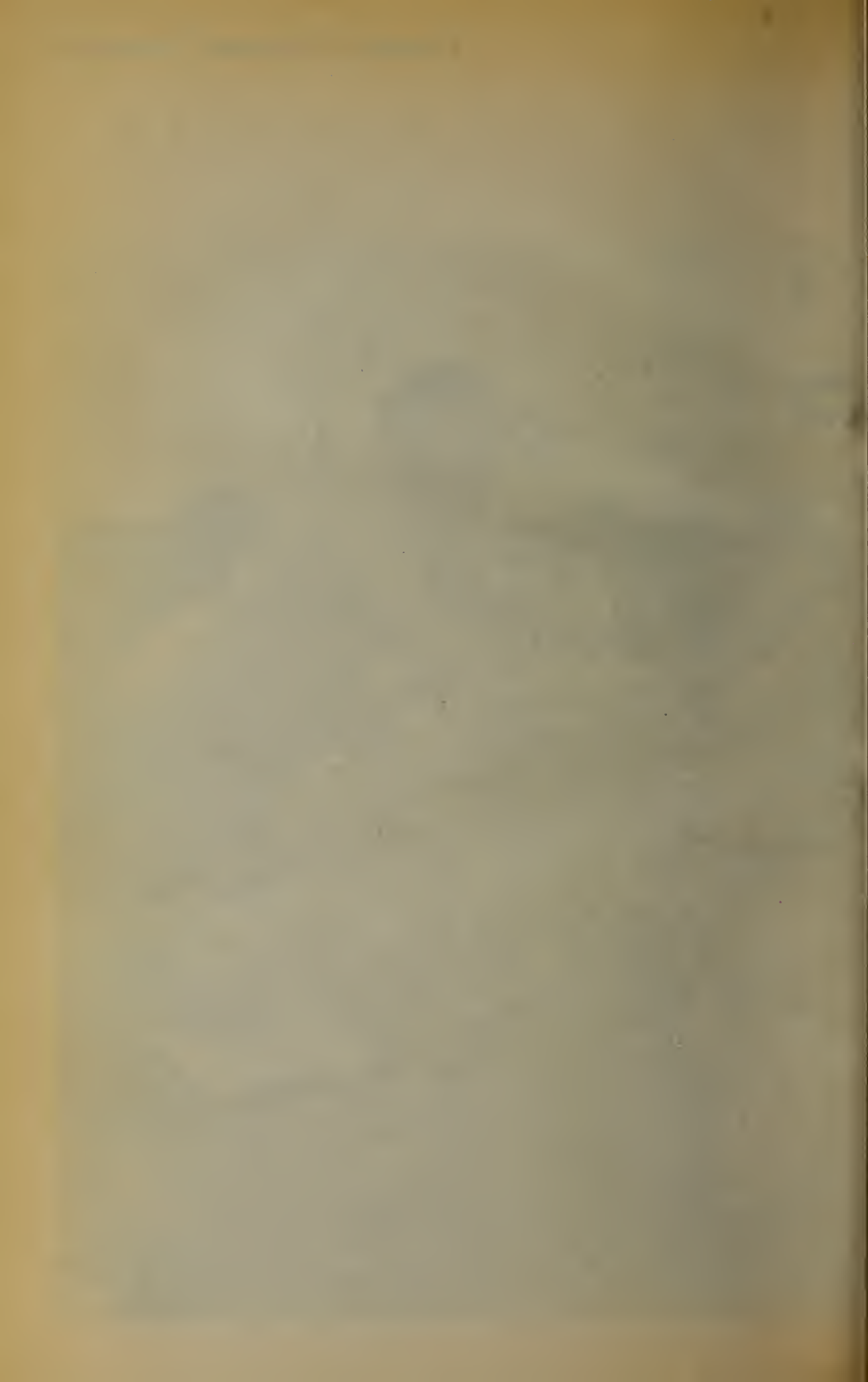
\*Graduate level programs only. For details please see  
Graduate Studies and Research Calendar. For under-  
graduate courses in Comparative Literature see pp.  
117-118.













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## Officers of the Faculty

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### Dean

D. Forcese

### Associate Dean

T.K. Rhymes

### Registrar

C.E. Dence

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## Directory of Offices

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### Office of the Dean,

B450 Loeb Building, 564-3703

### Registrar's Office,

312 Paterson Hall, 564-6690

### African Studies, M. Kiggundu, Chairman,

916 Arts Tower, 564-4373

### Anthropology, See Sociology-Anthropology

### Asian Studies, M. Rudner, Chairman,

2A54 Paterson Hall, 564-2891

### Biology, D.R. Gardner, Chairman,

583 Tory Building, 564-3871

### Business, A.J. Bailetti, Director,

901 Arts Tower, 564-4373

### Canadian Studies, Co-ordinator to be announced,

1116 Arts Tower, 564-2877

### Criminology and Criminal Justice, K. Hatt, Co-ordinator,

3A40 Paterson Hall, 564-7412

### Directed Interdisciplinary Studies, F. Cherry, Co-ordinator,

3A46 Paterson Hall, 564-6342

### Economics, D.A. Smith, Chairman,

C871 Loeb Building, 564-4377

### Geography, A.I. Wallace, Chairman,

B340 Loeb Building, 564-2641

### International Affairs\*, B.W. Tomlin, Director,

2A57 Paterson Hall, 564-2695

### Labour Studies, F. Griezic, Co-ordinator,

414 Paterson Hall, 564-6356

### Law, D. Wayand, Chairman,

C473 Loeb Building, 564-7540

### Mathematics and Statistics, B.M. Puttaswamaiah,

Chairman,

712 Arts Tower, 564-5500

### Political Science, T. Rakowska-Harmstone, Chairman,

B640 Loeb Building, 564-2697

### Psychology, W. Jones, Chairman,

B551 Loeb Building, 564-3636

Public Administration, A. Maslove, Director,  
1001 Arts Tower, 564-6360

Social Work\*, R. Lecomte, Director,  
469 St. Patrick's Building, 564-3677

Sociology and Anthropology, J. Harp, Chairman,  
B750, Loeb Building, 564-6650

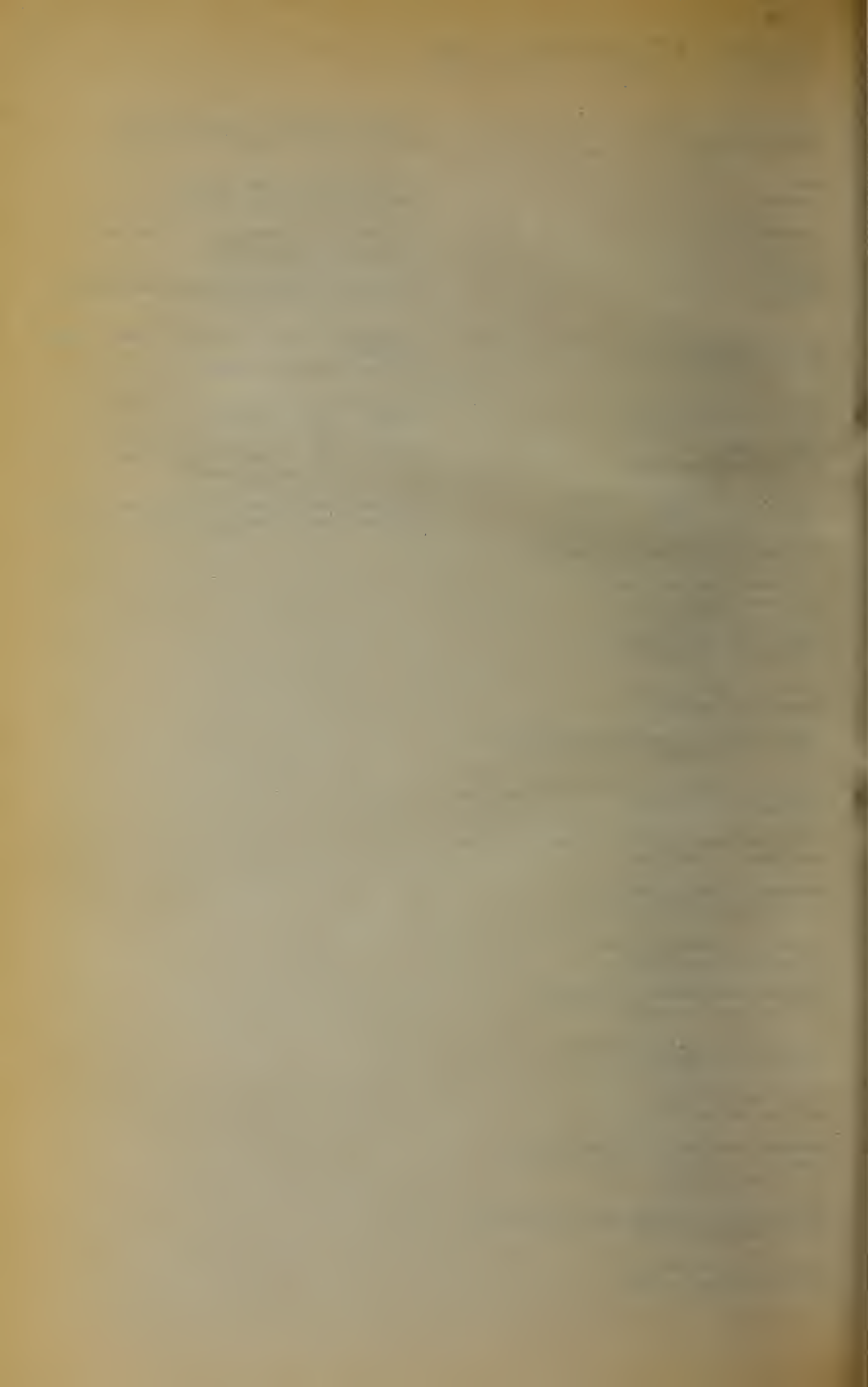
Soviet and East European Studies, L. Black, Director,  
461 Paterson Hall, 564-2711

Technology, Society, Environment Studies, P. Kruus,  
Chairman,  
229 Steacie Building, 564-5688

Urban Studies, M. Rosenberg, Co-ordinator,  
D398 Loeb Building, 564-3659

Women's Studies, E. Saunders, Co-ordinator,  
331 St. Patrick's Building, 564-5530

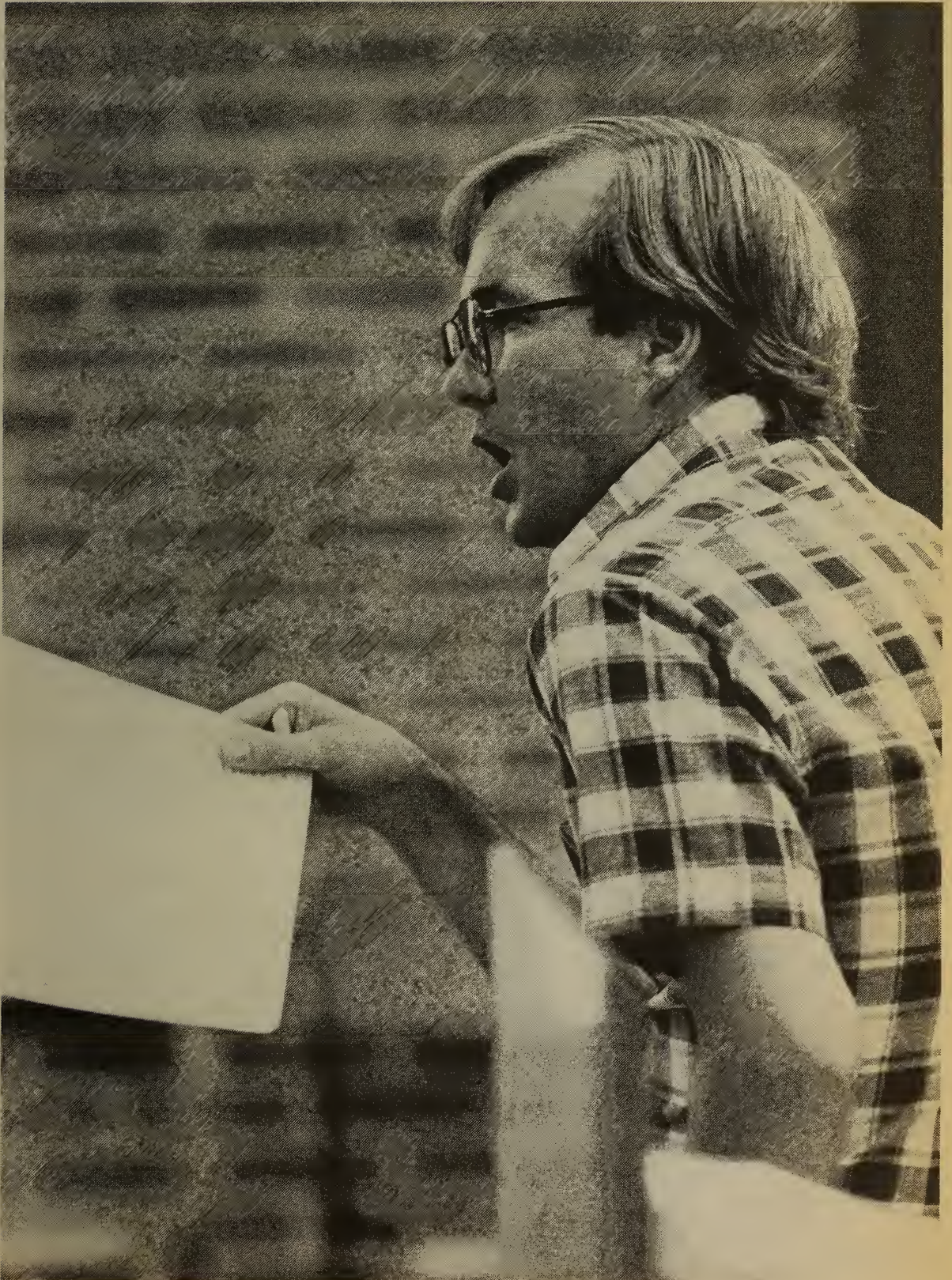
\*Graduate level program only. For details please see  
Graduate Studies and Research Calendar.





Faculty of Arts

Faculty of Social Sciences









# Faculty of Arts; Faculty of Social Sciences

## Degree, Certificate and Diploma Programs

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### Degree, Certificate and Diploma Programs

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The Faculties of Arts and Social Sciences offer programs in six degrees, five certificates and one diploma.

#### Bachelor of Arts and Bachelor of Arts with Honours (B.A.)

The three-year Pass B.A. program provides a liberal university education of value either as a general intellectual preparation for a great number of non-specialized careers, or as an introduction to subsequent specialized study. The program offers the degree with Major or Combined Major, or in Directed Interdisciplinary Studies.

The four-year program for the Honours B.A. provides more rigorous and extensive study in one or two disciplines. The Honours degree is necessary for entry to certain fields of employment, and is a desirable preparation for graduate studies and professional training, including teaching. An Honours program is also available in Directed Interdisciplinary Studies.

#### Bachelor of Commerce (B.Com.)

The four-year Honours program in commerce provides a foundation in the disciplines essential to careers in business. The program is offered by the School of Business.

#### Bachelor of Journalism (B.J.)

The four-year Honours program and the one-year post-degree Honours program are both designed to prepare students for careers in the mass media. The program is offered by the School of Journalism.

#### Bachelor of Music (B.Mus.)

The four-year Honours program prepares students for graduate studies in musicology and ethnomusicology, and gives an essential background for careers in music librarianship, music administration, and teaching. The program is offered by the Department of Music.

#### Bachelor of Public Administration (B.P.A.)

The four-year Honours program provides a foundation in the disciplines relevant to the practice of public administration. The program is offered by the School of Public Administration.

#### Certificate in English Language and Composition (C.E.L.C.)

A five-credit post-degree certificate intended primarily for practising teachers, to upgrade their knowledge of areas of language and of writing theory that underlie the new Ontario guidelines. Also open to persons without a degree who hold a teaching certificate. The program is offered by the Department of English Language and Literature.

#### Certificate in French Language Studies (C.F.L.S.)

This is a six-credit program designed to permit people who already have some knowledge of French to achieve a high level of proficiency in the language. The program should be of particular interest to mid- and senior-level public servants, business people, teachers and other professionals as well as members of the general public. The program is offered by the Department of French.

#### Certificate in Public Service Studies (C.P.S.S.)

This is a six-credit program in public service subjects at the undergraduate level. The program is offered by the School of Public Administration.

#### Certificate in the Teaching of English as a Second Language (C.T.E.S.L.)

This is a five-credit program in the theory and practice of teaching English as a second language. The program is offered by the Department of Linguistics.

#### Certificate in Law Enforcement Studies (C.L.E.S.)

A six-credit program designed for persons employed in the area of law enforcement, national security or corrections. The program is co-ordinated by the Department of Sociology and Anthropology.

#### Diploma in Music (Dip.M.)

This is a one-year undergraduate program in music combining musical performance with courses in general musical literacy, theory and history of music. It is offered by the Department of Music.

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### Disciplines of Specialization

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The following table illustrates the choice of specialization available in the B.A. program. Commerce is available only in the B.Com. program. Honours in Journalism is available in the B.J. program, but Journalism may also be taken as a Combined Honours subject in the B.A. (Honours) program. Honours specialization in Music is available in the B.Mus. program, but Music is also available as a Major, Combined Major, Honours or Combined Honours subject in the B.A. program.

For a B.A. with Major or Combined Major, students must present a total of 15 credits if admitted to First year, or 20 if admitted to Qualifying-University year. For a B.A. with Honours or Combined Honours, students must present a total of 20 credits if admitted to First year, or 25 if admitted to Qualifying-University year. Program requirements are set out in detail in the departmental entries in this calendar.

#### Specializations in the B.A. Programs

Code:

**M:** Major

**CM:** Combined Major

**H:** Honours

**CH:** Combined Honours

Architecture **CM, CH** (may be combined with Art History only)

Anthropology **H, CH**

Art History **M, CM, H, CH**

Biology **M, CM, H, CH**

Canadian Studies **M, CM, CH**

Classical Civilization **M, CM, H, CH**

Computer Mathematics **M, H**

Directed Interdisciplinary Studies **M, H**

Economics **M, CM, H, CH**

English **M, CM, H, CH**

Film Studies **M, CM, H, CH**

French **M, CM, H, CH**

Geography **M, CM, H, CH**

German **M, CM, H, CH**

Greek **M, CM, H, CH**

History **M, CM, H, CH**  
 Italian **M, CM, CH**  
 Journalism **CH**  
 Latin **M, CM, H, CH**  
 Law\* **M, CM, H, CH**  
 Linguistics **M, CM, H, CH**  
 Mass Communication **M, CM, H, CH**  
 Mathematics **M, CM, H, CH**  
 Music **M, CM, H, CH**  
 Operations Research **H**  
 Philosophy **M, CM, H, CH**  
 Political Science **M, CM, H, CH**  
 Psychology\* **M, CM, H, CH**  
 Religion **M, CM, H, CH**  
 Russian **M, CM, H, CH**  
 Sociology\* **H, CH**  
 Sociology/Anthropology\* **M, CM**  
 Soviet and East European Studies **H, CH** (may be combined with journalism only)  
 Spanish **M, CM, H, CH**  
 Statistics **H**

\*A concentration in Criminology and Criminal Justice is offered in a Pass or Honours program in conjunction with specialization in Law, Psychology, or Sociology/Anthropology, or any combination of two of these three disciplines.

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### Part-Time Study

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Part-time study is a viable method of attaining a degree in the Faculties of Arts and Social Sciences. A wide choice of courses is taught in the evening and during the summer. In addition, part-time students are welcomed into day courses.

Part-time students who wish to limit their studies to evening and summer times should note that the following departments teach a range of courses in the evening and during the summer that will permit students to complete a major in their discipline.

#### Arts

Art History  
 Canadian Studies  
 English Language and Literature  
 French  
 German  
 History  
 Linguistics  
 Music  
 Philosophy  
 Religion  
 Spanish

#### Social Sciences

Economics  
 Geography  
 Law  
 Political Science  
 Psychology  
 Sociology/Anthropology

Students wishing to pursue an Honours degree on a part-time basis are urged to consult with the appropriate department(s) about the scheduling of courses.

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### Academic Clubs and Societies

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The following clubs and societies serve to broaden and enrich the curriculum, and to offer students social activity and friendship related to their intellectual interests. The societies listed here are particularly pertinent for students registered in the faculties of Arts or Social Sciences.

*The Carleton University Biology Society* sponsors a variety of academic events including meetings between faculty and students, seminars and field trips. The society also uses social functions to promote informal contact between faculty and students, and is active in acquainting students with on-going biological research. Faculty adviser: Dr. M.B. Fenton.

*The Carleton Cinema Club*, open to all members of the University, promotes film events through public screenings. Faculty sponsor: Mark Langer.

*The Classics Academic Society* sponsors public lectures by visiting speakers and student-faculty social gatherings. Faculty co-ordinator: Chairman of the Classics department.

*The Carleton Commerce Society* organizes social and academic events to strengthen the link between students, faculty, and the business community, and to promote stronger ties among Business students.

*The Carleton Economics Society* (CUES) sponsors academic events that are of interest to students in Economics, as well as a variety of social functions to strengthen ties among the students and to promote informal contact with the faculty of the Department. Faculty adviser: T.W. Ross.

ELSS, *the English Literature Students' Society*, open to all students, offers theatre trips, work with a printing press, a lecture series, writers' groups, debating groups, reading groups, parties and the publication of a creative writing monthly. Faculty liaison: A. McLay, J. Wilcox.

*The Club Francophone* is open to all members of the University interested in the French language and in French and French-Canadian culture. The Club promotes informal language practice and sponsors speakers, discussions, musical and social events, films and excursions. Faculty adviser: W. Fraser

*The Carleton University Geography Society* (CUGS) organizes lunch-time talks or movies of academic interest and a variety of social events, promotes student-faculty contact, and sponsors the Harvey Humbolt Chair of Geomorphography.

*The German Academic Society* (formerly Deutschklub) is open to all members of the University interested in the language and culture of German-speaking countries. Regular meetings with films and speakers are featured. Faculty contact: Chairman of the German Department.

*The Ottawa Historical Association* is a "town and gown" association of people interested in history, offering a series of lectures and discussions.

*The Carleton Italian Society*, in collaboration with the Department of Italian, sponsors lectures on Italian topics, Italian films, social events and informal discussions for students interested in Italian culture.

MATHSOC, *the Carleton University Mathematics Society* promotes contact among students of mathematics and



statistics and faculty by sponsoring social events, seminars and films. Faculty co-ordinator: Dr. R.M. Herz-Fishler.

The Department of Music is affiliated with five groups, which are open to anyone who is interested and which perform both on and off campus throughout the year. *The Twentieth Century Performance Group* specializes in music by avant-garde composers and students in the Department. It is a group of 15 to 20, and auditions may be required. *The Carleton Concert Band* is open to anyone with some skill on an instrument. *The Collegium Musicum* comprises three sub-groups: *The Carleton Baroque Renaissance Consort* concentrates on sixteenth- and seventeenth-century instrumental and vocal music; *The Carleton Medieval Consort* of instrumentalists performs music up to the fifteenth century; and *The Carleton Viol Consort* plays string music of the sixteenth and seventeenth centuries. In addition, there is *The University Chorus*, which is open to anyone who loves to sing. The *Music Society* is a group of students which sponsors various activities.

*The Carleton University Philosophy Society* organizes lectures, discussion groups and social events for all members of the Carleton University community interested in philosophy. Further information is available through the Philosophy Department secretary.

*The Political Science Forum*, the academic society of the Department of Political Science, promotes communication among students and faculty through seminars, speakers, symposia and social events.

*The Carleton Press Club*, the academic society of the School of Journalism, sponsors talks, panel discussions and social functions. The Press Club also publishes a yearbook for the School of Journalism called "The Next Estate."

*The Public Administration Undergraduate Society* organizes social and academic events to strengthen ties between students and faculty and to help acquaint students with current issues in public administration.

*La Sociedad Hispánica* (Hispanic Society) welcomes all members of the University interested in Latin American and Spanish cultures and language. The emphasis is on the practice of the spoken language in a relaxed atmosphere and on sponsoring films, lectures and social events to expose others to these cultures.

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## The Academic Regulations

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### Office of the Registrar, Faculties of Arts and Social Sciences

*Registrar*  
C.E. Dence

*Assistant Registrars*  
K. McGillivray  
J. Nordenstrom

*Academic Adviser*  
M. Foulger

The Office of the Registrar is a source of general information on the faculties' academic programs. Specific information about course content, subject matter, and the structure of Major or Honours programs is obtainable from the academic departments.

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## 1. Administration of the Regulations

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### 1.1 General Administration

The regulations on the following pages apply, except when noted, to all degree and certificate programs of the faculties administered by the Faculty Registrar's Office and the student's school or Major department. The Faculty Registrar's Office provides an Academic Advisory Service, and students are urged to seek the Service's advice on all questions about the regulations, and in particular before taking any action affecting promotion and probation, withdrawal, transfer of credit, review of grades, and change of Major or degree program. Appointments: 320 Paterson Hall (564-7407).

### 1.2 Student Responsibility

The student is responsible for knowing the regulations and complying with them. Specific written permission must be obtained for exceptions to the regulations. Routine approval of a records form (for example the registration contract or course-change form) does not constitute approval of an exception.

### 1.3 Requests and Petitions

The Faculties' Committee on Admission and Appeals is responsible for considering student requests for special consideration respecting the regulations. Decisions on requests are made by the Registrar according to guidelines set by the Committee. Students may have such decisions reviewed by petitioning the Committee.

Requests and petitions are made in writing to the Faculty Registrar's Office, if possible on the forms provided. Students should discuss their requests or petitions with an adviser. The circumstances of any request or petition are held in the strictest confidence.

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## 2. Admission, Readmission, and Degree Transfer

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### 2.1 New Students

Detailed requirements for initial admission to the Faculties' degree and certificate programs are given on pp. 29-34.

### 2.2 Readmission

Students in the following categories are required to apply for readmission before registration. Readmitted students are governed by the regulations in effect at the first registration following readmission.

- (a) Students who after graduation wish to pursue a further degree;
- (b) Students who have been absent from the University for two consecutive Fall/Winter sessions and the intervening Summer session;
- (c) Students who have been admitted to a degree program and have taken courses at any other post-secondary institution since their last registration at Carleton (except students studying on a Letter of Permission from the Faculty Registrar's Office);
- (d) Students who have forfeited degree status.

#### Note:

Applications for readmission (obtainable from the Admissions Office) must be filed before July 1 for the Fall/Winter session and before April 1 for the Summer session.

### 2.3 Change of Degree Program

Applications to change degree programs must be made to the Faculty Registrar's Office by August 1 for the Fall/Winter session, by December 1 for Winter term of the Winter session, and by April 1 for the Summer session.

Students who are transferring are governed by the regulations in effect at the first registration following the transfer.

### 2.4 Declaration of Major/Application for Honours

Students may apply to declare or change their Major at the following times and places: In March in the academic departments for the following September registration; during registration periods at the Faculty Registrar's Office. (See 6.)

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## 3. Registration

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### 3.1 Registration

Students are to complete their course registrations by the registration periods shown for the session or term in the schedule for the Academic Year on pp. 11-12.

### 3.2 Late Registration

Registration during the late registration period incurs a late registration fee. Enrolment is not permitted after the late registration period.

### 3.3 Credit Value

Unless otherwise indicated, courses in the Faculties are of one full credit, indicated 1.0 on all records documents. Courses marked ★ are half-credit courses, indicated 0.5.

### 3.4 Course Load

In the Fall/Winter session full-time students may register in the equivalent of five half-credits per term, part-time students in two half-credits per term, audited courses included.

In the Summer session students may enrol in up to two credits. This total includes audited courses and supplemental, grade-raising and deferred examinations.

#### Overload

Permission to exceed these limits may be granted by the Faculty Registrar to students with a C+ average overall and in the Major (failures included) who completed a full course load in the previous session (five credits if full-time, two if part-time). The maximum permissible load in any term of the Fall/Winter session is six half-credit equivalents for full-time students and three half-credit equivalents for part-time students. Qualifying-University-year students may not exceed the normal load.

### 3.5 Auditing

Students may, with the instructor's permission, register in some courses as auditors. (See p. 40 for details.) Auditors receive no grade and no credit for the course. No change from credit to audit or from audit to credit will be permitted beyond the last day for course changes in any course. Auditors are not permitted in some courses; in particular, students are not permitted to audit courses with limited enrolment.



### 3.6 Change of Course and Section

Changes of course, or of section within a course, must be reported to the Faculty Registrar's Office by the following dates:

Fall/Winter full session: September 19  
 Fall term: September 19  
 Winter term: January 16  
 Winter term full credit: January 16

### 3.7 Withdrawal

Students withdrawing from courses or from their entire program must notify the Faculty Registrar's Office on or before the following dates. Students receiving scholarships or financial assistance should consult the Awards Office before dropping courses.

Fall/Winter full session: March 13  
 Fall term: November 14  
 Winter term: March 13

For Summer session 1986 see the Summer Session Calendar

For Summer session 1987 see the Academic Year pp. 11-12.

*Note:*

*The onus for notifying the Registrar's Office of withdrawal rests solely with the student. Ceasing to attend lectures or informing the instructor does not constitute withdrawal, and normally results in an Abs or FNS grade.*

### 3.8 Exchange Agreements

Students in good standing (see 3.10) may be eligible to study elsewhere on one or more of the many exchange agreements available to undergraduate students.

#### *University of Ottawa Exchange Agreement*

Students maintaining full-time registration may, during their Second or higher year, take their fifth credit at the University of Ottawa without additional fee. Registration, on forms provided at the Faculty Registrar's Office, should be commenced early because of the early registration period at the University of Ottawa. Grades are transferred to the student's Carleton record for courses taken at the University of Ottawa under this agreement.

Students withdrawing from an exchange agreement course must notify both Universities, or a grade of Abs or FNS may be recorded. There may be financial implications.

#### *Université de Savoie, Chambéry, France*

This program is open to non-francophone students in an Honours or Combined Honours program in French in their Third year of studies. Application should be made to the Department of French during Second year. Grades are not transferred to the student's Carleton record for courses taken under this agreement. Students register at Carleton prior to departure for France and must notify both Universities if withdrawing from the agreement. For general information and information about fees contact the French department. Financial assistance is also available.

#### *Université du Québec, Trois Rivières*

This program is open to non-francophone students in an Honours or Combined Honours program in French in their Third year of study. Application should be made to the French department during Second year. Grades are not transferred to the student's Carleton record for courses taken under this agreement. Students register at Carleton prior to departure for Trois Rivières and must notify both Universities if withdrawing from the agreement.

For general information and information about fees contact the Department of French. Financial assistance is also available.

#### *State University of New York and University of Massachusetts*

Exchanges are possible for a year of study at two American universities, the State University of New York (SUNY) and the University of Massachusetts (U. Mass.). Undergraduates should be in their Second year at Carleton when they apply for the exchange. Exchanges are intended to be for an academic year, that is, the two semesters extending from September to December and from January to May but it may be possible to study in the United States for one term only.

Application is made on a form that can be obtained from the Paterson Centre for International Programs, Room 1506 Arts Tower (564-7457). Applications must be submitted to the Paterson Centre by February 1 for the following academic year. The application must be accompanied by a short statement describing the student's objectives in studying at another university, an academic transcript, letters from two academic referees, and also by a Letter of Permission from the Registrar's Office (see 3.10). Letters of Permission normally take a month to prepare.

#### *Study Abroad*

Carleton maintains a relationship with the Denmark International Studies program (D.I.S.) in Copenhagen where Carleton undergraduates can spend a year studying liberal arts, international business or architecture.

For Honours students in their Fourth year there is an exchange agreement with the University of Edinburgh. Applications must be made by November 30 for the academic year beginning the following October. Consult the Paterson Centre for more information.

### 3.9 Courses from Other Faculties and Schools

Students must consult the Faculty Registrar's Office about registering in courses from other faculties and schools. Science and interdisciplinary courses are generally acceptable. Courses in Engineering and Industrial Design are generally not acceptable and registration in these courses is not permitted. Professional courses in Journalism are not acceptable options in the B.A. A limited number of Architecture courses are permitted in certain programs only.

### 3.10 Transfer of Credit

Before taking courses at another university students must obtain a Letter of Permission from their Registrar's Office.

Students who take courses without obtaining a Letter of Permission will not be granted credit for the courses. Permission obtained from an instructor or from a department does not obligate the University to accept a credit.

#### *Eligibility:*

To be granted permission, students must have completed at Carleton a minimum of four credits and be in good standing, i.e.:

- (a) Must be on the course credit system;
- (b) must have C- or better in half their Carleton credits;
- (c) must have at least a C- in the prerequisite for the proposed course;
- (d) must have the minimum averages required for graduation;
- (e) must not have acquired the maximum number of failing grades, supplementals, grade-raising examina-

tions, repetitions, or replacements allowable in their programs. See Promotion, 4.4.

#### *Maximum Load*

Subject to the regulations of the host university, a Carleton student studying on a Letter of Permission may take a maximum of 2.0 credits in the Summer and 5.0 credits in the Fall/Winter session.

#### *Transfer Credit Grading*

(a) Grades for courses taken on Letters of Permission will not be transferred.

(b) The Major department or the Registrar may require that the student obtain a minimum grade higher than the passing grade. The student shall be notified of such a requirement when the Letter of Permission is issued. Should the student pass the course but fail to meet this minimum grade, credit will not be recorded.

(c) Failure on a course taken elsewhere will be recorded with the appropriate credit value, and will be taken into account in all assessments of eligibility to register and graduate.

(d) If a student writes a supplemental examination in a course taken on a Letter of Permission, both the failure and subsequent pass or failure will be recorded.

#### *Reporting*

(a) If students find it necessary to have their Letter of Permission amended they must notify the Registrar's Office prior to completion of the course.

(b) Students are required to present to Carleton an official transcript showing results in courses taken on a Letter of Permission. If the transcript is not forthcoming, the course will be awarded a failing grade.

(c) Students completing a final credit for a degree on a Letter of Permission during the Fall/Winter session are warned that transfer grades may not be available in time for Spring graduation.

#### *Application and Fees*

(a) Applications for a Letter of Permission must be obtained from the Faculty Registrar's Office. The application form must be returned to that office accompanied by a photocopy of the official description of the course.

(b) Applications for a Letter of Permission must be made by November 15, for January registration; March 31, for Summer registration; and July 31, 1985 for September registration.

(c) A processing fee is charged for Letters of Permission. Students should note that this is a per-course, not a per-course-credit, fee. (See p. 46.)

### **3.11 Residence Requirement**

#### *Degree Programs:*

To obtain a degree from Carleton University, students must present a minimum of five credits taken at Carleton. These five credits must include credits in the Major or Honours subject(s) as follows:

*Major:* 3.0 credits;

*Combined Major:* 3.0 credits in one subject and 2.0 credits in the other;

*Honours:* 4.0 credits including the Honours thesis or comprehensive examination where it is a requirement of the program;

*Combined Honours:* 3.0 credits in one subject and 2.0 credits in the other including the Honours thesis or comprehensive examination where it is a requirement of the program.

Departments may require that certain of these credits be at the senior level.

#### *Certificate and Diploma Programs:*

To obtain an undergraduate Certificate or Diploma from Carleton University, students must present a minimum of four credits taken at Carleton, including all core courses.

#### *Multiple Undergraduate Degrees*

Students admitted to a second undergraduate program must, in addition to meeting the requirement described above, present a minimum of five credits in a degree program (four in a certificate or diploma program) taken at Carleton and not counted for any previous program. These must include three credits in the area of specialization of the new program. Variations from this pattern may, in very exceptional circumstances, be approved by the Joint Committee on Admissions and Appeals. Consult the Faculty Registrar's Office.

### **3.12 Student Records**

Incorrect address information will delay the receipt of awards, examination results, and notification of changes in academic status. Addresses must include postal codes. Students must notify the Faculty Registrar's Office immediately of any change in:

(a) permanent or home address (used for final grades and registration information);

(b) local address (used for all mail during the academic session);

(c) telephone number for permanent address and for local address;

(d) name.

### **3.13 Challenge for Credit**

#### *Degree Programs*

A student with experience and non-university learning equivalent to a specific Carleton course may receive credit for that course through the Challenge for Credit procedure. If the University is satisfied that a student is adequately grounded in a course, credit may be granted by examination, without the normal requirements of attendance and instruction. Not all departments participate in this procedure. A fee is charged for each challenge. A student may present no more than five challenged credits in a degree program. Students must enquire at the Faculty Registrar's Office.

Credits obtained by challenge may be not used to satisfy the Residence Requirement (see 3.11).

#### *Certificate or Diploma Programs*

A student may challenge up to one credit in an undergraduate Certificate or Diploma. Students must enquire at the Faculty Registrar's Office.

## **4. Promotion and Continuation**

### **4.1 Standing in Courses**

Standing in courses is shown by alphabetical grades as described on p. 42. Supplemental examinations are graded by the same scale.

In addition the following symbols apply in the Faculties of Arts and Social Sciences:

#### *Abs*

Absent from formally scheduled final examinations where the necessary term work has been completed. (This



grade bears academic penalty in that for purposes of promotion and calculation of certain averages it is interpreted as an *FNS* grade.)

#### **Aeg**

Pass standing is granted on the basis of course work when no further assessment is considered feasible. Aegrotat is granted only by approval of the Committee on Admissions and Appeals in response to a student's application. (See also 5.3 and p. 43.)

#### **Def**

Final grades deferred for personal or medical reasons with approval of the Committee on Admission and Appeals.

#### **IP**

Honours thesis or essay is "In Progress". (See 6.5 p. 89.)

#### **Sat**

Satisfactory

#### **Uns**

Unsatisfactory

### **4.2 Computation of Averages**

The 12-grade-point system is set out on p. 00. The grade points earned in any specific course are determined by multiplying the grade points corresponding to the grade by the credit value of the course. Thus an A+ in a half-credit course will earn the student six grade points, while A+ in a two-credit course would be worth 24 grade points.

Grade-point averages are calculated by dividing the total accumulated grade points by the total credits. Both the credits and the grade points are doubled in the case of double-weighted courses.

Averages for graduation are calculated on the grades earned in the number of courses required for the degree, taking first into consideration the grades earned in the courses of the Major or Honours department. Some departments include all courses in the Major/Honours field; others include only those required by the program. Failures are not included in the calculation of graduation averages.

Averages used for other purposes such as admission and continuation may be calculated on a different basis using different courses and include courses with failing grades.

Averages are not recorded on the official Carleton transcript.

### **4.3 Promotion from Qualifying-University Year and First Year**

A full-time student must pass four credits and obtain C- or better in two credits. A part-time student must pass four of the first six credits attempted and obtain C- in two credits.

### **4.4 Course Credit System**

Students meeting promotion requirements at the end of Qualifying University year or First year will proceed on the course credit system. Under this system there is no further promotion from one year to the next.

After promotion to the course credit system, a student in a three-year degree program may accumulate failing grades (*F*, *FNS*, *Abs*), supplemental examinations, grade-raising examinations, and repeated, or replacement courses equivalent to no more than five credits. A

student in an Honours program may accumulate only three discredits.

#### **Discredits**

Discredits are failing grades (*F*, *FNS*, *Abs*), supplemental examinations, grade-raising examinations, repeated or replacement courses. A failed full-credit course followed by a failed supplemental counts as two discredits.

#### **Time Limits**

Students who have not graduated seven calendar years after promotion to the course credit system may have their remaining requirements reviewed.

### **4.5 Conditional Pass**

Full-time students who are not on the course credit system and not on probation, and who pass 3.0 or 3.5 credits in the Spring examinations will be considered to have passed their year conditionally. They must meet the requirements of 4.3 by the end of the August examination period by taking Carleton Summer courses or writing supplementals and/or grade-raising examinations to a maximum of two credits.

Students who pass conditionally may not take courses on a Letter of Permission.

### **4.6 Failure and Probation**

A student who fails to meet the promotion requirements in 4.3 and 4.5 and who is not on the course credit system has failed. Credits passed will count toward the degree, but may not be used to meet subsequent promotion requirements.

A student who has failed may return on probation. To clear probation a full-time student must pass four credits and obtain C- or better in two credits in the Spring final examinations. A part-time student must pass four credits of the next five attempted and obtain C- in two of these credits. Students on probation may not write supplemental or grade-raising examinations or receive Letters of Permission.

Students on probation who fail more than 1.0 credit will be suspended.

### **4.7 Suspension**

A student on probation who fails to meet the terms of probation is suspended and becomes ineligible for further registration.

A student who collects more than five discredits will also be suspended. (See 4.4.)

Students under suspension may request readmission to a degree program only by meeting terms prescribed by the Committee on Admission and Appeals. These terms will be prescribed individually in response to the student's petition, which should be made immediately after suspension.

#### **Note:**

Courses taken while a student is under suspension will not establish eligibility for readmission or count for a degree.

### **4.8 Accelerated Progress**

Students admitted to Qualifying-University year may have some or all of the courses taken in Qualifying-University year count toward the degree if they:

- (a) have completed at Carleton one year's full-time study;
- (b) have no failures or grade-raising examinations on

their record; and

(c) present a minimum B- (7.0 average) on 5 credits, i.e. a total of 35 grade points.

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## 5. Examinations

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General regulations on examinations are on p. 43. In addition the following regulations apply to students in the Faculties of Arts and Social Sciences.

### 5.1 Eligibility

(a) No student may write supplemental and/or grade-raising examinations in more than two credits in any academic year.

(b) Students on probation may not write supplementals or grade-raising examinations.

(c) Students who pass conditionally in the Spring but fail to meet the terms of promotion by the end of the Summer may not write supplemental or grade-raising examinations on Summer courses.

### 5.2 Supplemental Examinations

Supplemental examinations are available in all undergraduate courses with written final examinations for those undergraduate students who have not been disqualified from such by receiving the grade of *FNS* or *Abs*.

Application forms are available at the Registrar's Office. Check for application deadlines under Academic Year pp. 11-12.

### 5.3 Deferred Examinations and Final Papers

Students who are unable to write a final examination or complete a final paper because of illness or other circumstances beyond their control may apply *within 14 days* to the Faculty Registrar's Office for permission to write a deferred examination or extend a term paper deadline. Permission can be granted only if the absence is fully and specifically supported by a medical certificate or other documents.

Deferred examinations are not granted to students who make travel plans that conflict with the examination period.

Application for Aegrotat standing (*Aeg*) must be made to the Registrar's Office, 312 Paterson Hall and will be granted only in exceptional circumstances and if term work has been of high quality. *Aeg* indicates only a passing standard; students aiming for a high grade-point average may prefer to write a deferred examination.

### 5.4 Grade-Raising Examinations

Grade-raising examinations will not normally be available in courses without written final examinations. No more than three credits worth of grade-raising examinations may be written in any degree program (including Qualifying-University year).

While both grades will appear on the transcript the grade awarded as a result of the grade-raising examination will be considered the final grade whether it is higher or lower than the original grade.

Application forms are available at the Registrar's Office. Check for application deadlines under Academic Year pp. 11-12.

A grade-raising examination written after promotion to the course credit system counts as a discredit. (See 4.4.)

### 5.5 Review of Grades

Students wishing to receive a review of a final grade may apply at the Faculty Registrar's Office within 14 days of the official release of grades for the term. A review may raise or lower a grade, or leave it unchanged. Students awaiting the outcome of a review must still apply for any supplemental examination by the prescribed deadline.

### 5.6 Repeated Courses

Students may repeat a course for which they have received a passing grade. The grade awarded on the repetition will be considered the final grade whether higher or lower than the original grade. It must be noted that the repetition of a course after promotion to the course credit system will count as a discredit. (See 4.4.)

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## 6. Entry and Continuation: Major and Honours Programs

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### 6.1 B.A. Major Programs

Students should apply to enter or change their Major affiliation as soon as possible after completing the relevant introductory course. Students are required to enter a Major after promotion from First year, unless granted exemption by the Registrar.

Students are required to be in a Major to register in Third year; those ineligible to enter a Major will be ineligible to register in the B.A. program.

To be accepted into a Major, students must have at least a C- average in the courses of their Major or Majors.

Students whose Major average is less than C- at the end of Second year may be required to withdraw from their Major.

### 6.2 B.A. (Directed Interdisciplinary Studies)

Students should apply for admission to the program on promotion from First year, or, if transferring from a Major program, before beginning their final five credits. The proposed program must be approved by the members of the Committee on Directed Interdisciplinary Studies. For details of the Pass and Honours programs, see p. 122.

Application forms, available at the Faculty Registrar's Office, must be submitted before July 15 for September registration.

### 6.3 Admission to Honours: B.A. (Hons.), B.Com., B.J., B.Mus., B.P.A.

Students may apply for Honours after having completed the introductory course in the discipline. They should consult the Honours adviser of the department before making application.

For entry into Honours, a student must have a grade-point average of 6.0 or better in the Honours subject and 4.0 or better overall and the recommendation of the Honours department or departments.

### 6.4 Continuation in Honours

For continuation in Honours a student must maintain a grade-point average of 6.0 or better in the Honours subject or subjects and 4.0 or better overall. Note, however, that minimum graduation requirements of 6.5 in the Honours subject(s) and 5.0 or better overall must be met. (See 7.4.)



At the beginning of their last five credits, students in Honours must have a grade of C- or better in at least half of the courses to be credited towards the degree.

Students who fail to maintain Honours standing must withdraw from the Honours program. They may apply for admission to a Major program. Students in this situation are advised to contact an adviser in the Faculty Registrar's Office.

Students in the Bachelor of Commerce program should consult p. 100 for continuation requirements.

## 6.5 The Honours Thesis or Research Essay

### General

Although the scope of the Honours Research Essay or Thesis should not exceed what the student can reasonably expect to complete within an academic session, up to two re-registrations are permitted. If the thesis is not completed within three consecutive sessions, a grade of F will be assigned. (Students who first register in September must submit the finished thesis by April 1 of the following Fall/Winter session.)

The First re-registration is optional. Students should note, however, that they are not eligible for supervision or library privileges, may not submit a thesis for grading, and may not graduate in the Fall convocation, if they are not registered.

The Second re-registration is compulsory for students whose theses are still outstanding at the beginning of the

third session. To avoid such re-registration students must either:

(a) withdraw from the Honours program, notifying the Registrar's Office of their intention in writing, no later than the last date for late registration; or

(b) notify the Registrar's Office of intention to complete the Honours program by means of appropriate alternative courses approved by the Honours supervisor.

### Withdrawal

Students may withdraw from the Honours thesis up to the last date for withdrawal from full courses in the session. Students who withdraw during their initial registration will retain Honours status. Students who withdraw from a re-registration will forfeit Honours status, unless they simultaneously transfer to another course or courses that meet Honours requirements. Students who withdraw from the Honours program will automatically be withdrawn from the Honours Thesis.

### Reinstatement

Students who forfeit Honours status, either by withdrawing from the thesis or by obtaining an F grade for non-completion, may apply for reinstatement in the Honours program. The department may require such students to begin a new project. Reinstated students will pay a full registration fee.

Students should apply to the Faculty Registrar's Office for registration information.

### Thesis or Essay Registration and Re-registration

The following table sets out a typical registration, re-registration schedule for a student registering in a thesis for the first time in September. Please note that there is a late fee payment assessed during the late registration period. (For information about fees, see pp. 45-47.)

Registration	Deadline*	Fee	Deadline for Submission of Completed Thesis*	Grade if not Complete	Deadline for Withdrawal from Thesis*
Initial Registration	Last day for late registration (Sept.)	fee per credit	June 1 (April 1 for Spring graduation)	IP	Last day for withdrawal from full courses (Mar.)
First Re-registration**	Last day for late registration for Summer session Day division (July)	fee per half credit	Sept. 15	IP	Last day for withdrawal from Summer session Day division full courses
Second Re-registration	Last day for late registration (Sept.)	fee per half credit	April 1	F	Last day for withdrawal from full courses (Mar.)

\* Consult "The Academic Year" applicable to each year, for precise dates (see pp. 11-12).

\*\*Optional — see 6.5 General.

## 7. Graduation

### 7.1 Application to Graduate

Students expecting to graduate in the Spring must make application on the form available in the Faculty Registrar's Office by February 1; those expecting to graduate in the Fall, by September 1; and those expecting to graduate in February, by December 1.

See also University Graduation Requirements, pp. 42-43.

### 7.2 Graduation Requirements: B.A. (Major and Interdisciplinary)

Candidates must meet the following requirements:

- (a) fifteen credits beyond Qualifying-University year;
- (b) a minimum of eight credits at the 200 level or higher;
- (c) requirements of Major program; or as set by the Directed Interdisciplinary Studies Committee;
- (d) a minimum grade of C- in half the courses presented (not including Qualifying-University year);
- (e) a minimum average of C- in the Major field or, in the case of Combined Majors, in each Major field;
- (f) in the case of the Directed Interdisciplinary Studies B.A., an overall average of C- in all courses presented for the degree as well as a minimum overall average of C- in the eight-credit pattern approved for the degree;
- (g) no more than five discredits after promotion to the course credit system; (See 4.4.)
- (h) must meet residence requirements (See 3.11.)
- (i) be recommended by their Major/Honours department(s);
- (j) fulfil all financial obligations to the University.

*Note:*

In calculating the average in the Major, some departments count all courses taken in the Major field while others count only the courses required. Students who have any questions about the calculation of their graduation average are advised to consult with their department(s). Graduation averages are an internal calculation and are never recorded on the transcript.

### 7.3 Graduation with Distinction

Students who graduate with a Pass degree will be designated as graduating "with Distinction" if they meet the following conditions:

- (a) they have no failures, grade-raising examinations, repetitions or replacements on their Carleton record after promotion to the course credit system;
- (b) they have achieved an overall grade-point average of 8.0 calculated on their Carleton record including all credits extra to the degree;
- (c) they have taken at Carleton at least ten credits counted towards the degree;
- (d) after promotion to the course credit system, they have achieved a grade-point average of 9.5 or better calculated on all Carleton credits being counted towards the degree.

These approved regulations came into effect as of the academic year 1985-86, but students already in course prior to that time can be assessed under either the old or the new regulations, whichever are more favourable. (See the 1984-85 Calendar for the old regulations.)

### 7.4 Graduation Requirements: B.A. (Honours), B.J., B.Com., B.Mus., B.P.A.

Candidates must meet the following requirements:

- (a) twenty credits beyond Qualifying-University year as

set out in departmental regulations (21 credits for journalism);

- (b) a minimum of 11 credits at the 200 level or higher (13 for Commerce);
- (c) requirements of the Honours program or as set by the Directed Interdisciplinary Studies Committee;
- (d) a minimum of C- in half the courses presented for the degree;
- (e) for students who entered Honours in or after the session beginning in September, 1980, a minimum grade-point average of 6.5 in each Honours field and 5.0 overall;
- (f) no more than three discredits after promotion to the course credit system (see 4.4);
- (g) must meet residence requirements (see 3.11);
- (h) be recommended by their Major/Honours department(s);
- (i) fulfil all financial obligations to the University.

*Note:*

In calculating the average in the Honours discipline, some departments include all courses in that discipline while others include only the courses required in the program. Students who have any questions about the calculation of their graduation average are advised to consult with their department(s). Courses taken in Qualifying-University year are not included in graduation requirements except where they include a course required by the program. Graduation averages are an internal calculation and are never recorded on the transcript.

### 7.5 Classes of Honours

For students who entered Honours in or after the session beginning September, 1980, three classes of Honours degrees are awarded according to grade-point averages attained:

- (a) Highest Honours: 10.0 in the Honours subject and 8.0 overall.
- (b) High Honours: 9.0 in the Honours subject and 7.0 overall.
- (c) Honours: 6.5 in the Honours subject and 5.0 overall.

Departments may recommend the next higher class of Honours degree when a student has one average in the appropriate higher range and the other within 0.2 grade points of the higher range.

To determine the class of Honours degree for students in Combined Honours programs the average is taken in each of the two subjects, and the simple average of the two is used.

Students who entered Honours for sessions prior to September, 1980, are awarded four classes of Honours as detailed in previous calendars.

## 8. The Qualifying-University Year and First-Year Curriculum

### 8.1 Qualifying-University Year

Students in Qualifying-University year must present five credits, which must include two of:

- (a) a 100-level course in English;
- (b) Mathematics 69.006★ and 69.007★;
- (c) a language other than English.

Students planning to apply for admission to other programs (i.e., B.J., B.Mus., B.Com.) should ensure that they take appropriate prerequisite courses. All Qualifying-University year students should familiarize themselves



with the provisions for Accelerated Progress and ensure that their choice of courses will permit them to proceed into Second year should they qualify.

## **8.2 First Year**

First-year students must present five credits selected according to **8.3** below. Students in the B.Com., B.J., B.Mus. and B.P.A. programs must meet the First-year prescriptions of their programs. First year B.A. students are encouraged to select courses that will acquaint them with a wide range of disciplines. Students should include in their First-year registration any course that is required for their prospective Major or Honours concentration, and should be aware that many upper-year courses stipulate prerequisites.

## **8.3 Course Selection**

New students in Qualifying-University and First years must attend the Summer Advisory Service, which provides full information on course selection. This Service operates through late July and the month of August by appointment.

Subject to the provisions of **8.1** and **8.2** and placement requirements, Qualifying-University and First-year students can choose 100-level courses from all departments in Arts, Social Sciences, and Science. In addition, some departments will allow First-year students to take certain courses numbered 200. Complete information is available in publications of the Summer Advisory Service.

While the University makes every effort to allow students to enrol in courses of their choice, enrolments may have to be limited in certain of the more popular courses.

# Department of Art History

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## Officers of Instruction

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### *Chairperson*

Marilyn Marshall

### *Supervisor of Honours*

Roger Mesley

### *Supervisor of Majors*

David Goodreau

### *Professor*

Clifford M. Brown

### *Associate Professors*

David Goodreau

Diane le Berrurier

James Thompson

### *Assistant Professors*

Natalie Luckyj

Roger Mesley

Ruth Phillips

### *Adjunct Professors*

Ted Brasser, *National Museum of Man*

Mary Cazort, *National Gallery of Canada*

George Swinton

### *Research Associates*

James Burant, *Public Archives of Canada*

Lilly Koltun, *Public Archives of Canada*

### *Slide Curator*

Barbara Stevenson

### *Sessional Lecturers*

Jean Blodgett

Martin Bressani

Rhona Goodspeed

Marie Montpetit

Veronica Vaillancourt

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## General Information

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The Department offers a wide range of courses, primarily in the history of Western art. Consequently, Major and Honours programs in Art History are flexible, and within the context of these degree programs students are encouraged to take courses in other departments of the Faculty of Arts such as Classics, History, Languages and Literatures, Music, Philosophy and Religion, as well as in the Faculties of Science and Social Sciences.

Within the requirements for Majors and Honours degrees, students are expected to take courses in the areas that form the undergraduate curriculum: Ancient, Medieval, Renaissance, Baroque and Rococo, Romantic, Modern, Contemporary, North American and Native Art. Courses in the theory of art and in art criticism are offered as adjuncts to those in art history.

A special feature of the Carleton program is an undergraduate *practicum*, in which degree students in their Third or Fourth year may receive up to one credit in art history for supervised practical experience, working on specific projects in an Ottawa museum or related setting, for example The Public Archives of Canada, The National Museum of Man, or The National Gallery of Canada.

Courses in the Faculties of Arts, Science, and Social Sciences provide options that complement art history and support certain specializations or career plans in art history. For example, courses in history, literature, languages and music are related, often directly, to the study of all art historical periods. Courses in film studies relate to contemporary art. Chemistry and/or studio work are especially recommended for students wishing to do post-graduate work in restoration and conservation. Certain offerings in sociology and anthropology are particularly useful for students working in the area of native art.

Major and Honours students in Art History should consider taking a studio course that acquaints them with techniques and materials that have been applied in the history of art, either through the University of Ottawa exchange agreement (see pp. 41 and 85 of this Calendar) or by means of a Letter of Permission. One credit in studio, including project-based courses in the School of Architecture, may be counted as a general option in either the Major or Honours program. Such courses must be taken in accordance with University policy and must be approved in advance by the Faculty Registrar's Office.

Students from other departments, part-time students and Special students may discover that courses in art history complement their interests or their programs. Such students may enrol in any course in Art History without the stated prerequisite if permission of the department has been obtained. Preparatory reading is expected of all students who enrol without the stated prerequisite, and appropriate reading lists are available from the department secretary throughout the year.

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## Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all departmental regulations and requirements as set out below.

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## Courses Open to First-Year Students

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The following courses are open to First-year students: Art History 11.110★, 11.111★, 11.115★, 11.202★, 11.203★, 11.204★, 11.210★, 11.220★, 11.221★, 11.230★, 11.241★, 11.242★, 11.250★, 11.260★, 11.286★, 11.287★.

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## Major Programs

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### **Major in Art History**

The Major degree program is designed for students who wish a liberal arts education with an emphasis on Art History. Students who decide that they wish to do graduate work, or who contemplate working in museology, should transfer to the Honours program as early as possible, preferably not later than the end of the Second year.

Courses must be chosen in consultation with the Majors Supervisor. Six credits in art history are required, as follows:

1. Art History 11.110★ and 11.111★;



2. Two of Art History 11.210★, 11.220★, 11.221★, 11.230★, and two of 11.241★, 11.242★, 11.250★, 11.260★;

3. Two and a half additional credits, all above the 200 level, including at least one credit from the areas Antiquity, Medieval, Renaissance, and at least one credit from the areas Baroque and Rococo, Romantic, Modern, Contemporary and North American art.

4. One additional half credit in Art History.

### Combined Major

The Combined Major degree program with other departments in the Faculties of Arts and Social Sciences and with the School of Architecture, requires five credits in Art History, of which at least one must be at the 300 level. Courses in the other department or school must meet the requirements of that department or school.

In the case of Architecture, the requirement is at least five approved credits in Architecture (see the approved list below), of which one must be at the 300 level.

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## Honours Programs

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### Honours in Art History

The Honours degree in Art History is designed for students contemplating graduate work in art history or museology, or who for other reasons wish to enrich their knowledge through an additional year of concentrated study.

Courses must be chosen in consultation with the Honours Supervisor. Ten credits in Art History are required, as follows:

1. Art History 11.110★ and 11.111★;
2. Two of Art History 11.210★, 11.220★, 11.221★, 11.230★, and two of 11.241★, 11.242★, 11.250★, 11.260★;
3. Two and a half credits at the 300 level, at least one credit to be taken from the areas Antiquity, Medieval and Renaissance and at least one credit from the areas Baroque and Rococo, Romantic, Modern, Contemporary and North American art.
4. Art History 11.316★;
5. Three and a half credits at the 400 level;
6. One additional half credit in Art History.

### Combined Honours

The Combined Honours degree program, with other departments in the Faculties of Arts and Social Sciences and with the School of Architecture, requires at least seven credits in Art History, including two Art History credits at the 400 level. Courses in the other department or school must meet the requirements of that department or school.

In the case of Architecture, the requirement is at least seven approved credits in Architecture (see the approved list below), including one credit at the 400 level.

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## Approved Architecture Courses

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Only the following approved courses in Architecture may be applied toward the architectural component of the

combined B.A. degrees: Architecture 76.120★, 76.121★, 76.203★, 76.204★, 76.205★, 76.208★, 76.209★, 76.212★, 76.302★, 76.307★, 76.308★, 76.408★, 76.423★, 76.488★, 77.113★, 77.130★, 77.205★, 77.213★, 77.230★, 77.300★, 77.302★, 77.303★, 77.305★, 77.330★, 77.350★, 77.391A★, 77.420★, 78.350★, 79.320★.

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## Language Study and Requirements

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It is strongly recommended, but not required, that Majors in Art History have the equivalent of at least a First-year course in a language suitable to their program. French 20.102, 20.103, 20.106★ or 20.108, German 22.115, Italian 26.100, and Spanish 38.115 are recommended.

Honours students are required to demonstrate a proficient reading knowledge of either French, German, Italian, or another language relevant to their program. A grade of at least *B-* in French 20.102, 20.103, 20.106★, 20.108, German 22.115, Italian 26.100, or Spanish 38.115, will be accepted in lieu of a reading examination. If advanced study in art history is contemplated, a reading knowledge at this level is recommended in both French and German, as these are requirements of most graduate schools.

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## Graduate Study

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A Master of Arts program in Canadian Studies, with specialization in Canadian art history, including Canadian native art, is offered through the Institute of Canadian Studies. (For further details see the current Calendar of the Faculty of Graduate Studies and Research.)

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## Courses Offered

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### Art History 11.110★

#### Western Art: Prehistory to Medieval

This course surveys the art and architecture of the western world from the Paleolithic era to the end of the Gothic period.

Day division, Fall term: Lectures three hours a week.

*N. Luckyj*

### Art History 11.111★

#### Western Art: Renaissance to the Present

This course surveys the art and architecture of the western world from the beginning of the Renaissance to the present day.

Evening division, Winter term: Lectures three hours a week.

*C. Brown*

### Art History 11.115★

#### Art as Visual Communication

This course addresses the question "What makes a work of art?" A wide variety of visual material is organized topically in order to examine the elements of art (line, shape, value, colour, texture, space), the principles of pictorial organization, the materials and techniques of art, and recurrent tendencies in artistic styles and outlooks.

Day division, Fall term: Lectures three hours a week.

*R. Mesley*

Art History 11.202★

**Canadian Art, Origins to Present**

This course surveys Canadian art from the beginning of European settlement to the present.

Day division, Winter term: Lectures three hours a week.

*N. Luckyj*

Art History 11.203★

**Arts of Native Peoples: North America**

This course is designed as an introduction to the traditional art and architecture of the native peoples of North America. Supplementary material about Pre-Columbian art and architecture of Meso and South America is also presented as background for the course.

Day division, Fall term: Lectures three hours a week.

*R. Phillips*

Art History 11.204★

**Arts of Native Peoples: Africa and Oceania**

This course is designed as an introduction to the art forms of the native peoples of tropical Africa, Australia, New Zealand and the tropical islands of the Pacific.

Not offered 1986-87.

Art History 11.210★

**Greek and Roman Art and Archaeology**

Offered in the Department of Classics as Classical Civilization 13.232★.

Day division, Winter term: Lectures two hours a week.

*T. Hodge*

Art History 11.220★

**Western Medieval Art**

The development of Western medieval art from the earliest Christian productions through the late Gothic period is studied, with some reference to Eastern medieval art for purposes of comparison.

Day division, Winter term: Lectures three hours a week.

*R. Goodspeed*

Art History 11.221★

**Eastern Medieval Art**

This course examines the sources and the development of the arts in the Byzantine Empire as well as the relationship of its artistic productions to those of neighbouring countries.

Not offered 1986-87.

Art History 11.230★

**Renaissance Art**

This course emphasizes art in Italy from 1400 to 1600, with reference to developments in northern Europe.

Day division, Fall term: Lectures three hours a week.

*C. Brown*

Art History 11.241★

**Seventeenth-Century European Art**

This course surveys Baroque painting, sculpture and architecture in Europe during the seventeenth century.

Evening division, Fall term: Lectures three hours a week.

*V. Vaillancourt*

Art History 11.242★

**Eighteenth-Century European Art**

This course surveys Rococo and Early Romantic painting, sculpture and architecture in Europe during the eighteenth century.

Evening division, Winter term: Lectures three hours a week.

*D. Goodreau*

Art History 11.250★

**Nineteenth-Century European Art**

This course surveys the major artists and artistic movements of nineteenth-century Europe.

Summer Evening division, First term: Lectures six hours a week.

Evening division, Fall term: Lectures three hours a week.

*R. Mesley*

Art History 11.260★

**Twentieth-Century European Art**

This course surveys the major artists and movements of twentieth-century Europe.

Summer, Evening division, First term: Lectures six hours a week.

Evening division, Winter term: Lectures three hours a week.

*R. Mesley*

Art History 11.286★

**Art and Ideas: From Ancient Greece to the Twentieth Century**

A survey of theories that have shaped the western approach to art and art criticism, including Plato, Aquinas, Kant, Hegel, Nietzsche and Collingwood.

Day division, Fall term: Lectures three hours a week.

*J. Thompson*

Art History 11.287★

**Art and Ideas: the Twentieth Century**

A survey of theories that have shaped the western approach to art and art criticism including psychological, sociological, phenomenological, semiotic and aesthetic approaches and including such thinkers as Freud, Arnheim, Marx, Heidegger, Barthes and Bell.

Day division, Winter term: Lectures three hours a week.

*J. Thompson*

Art History 11.300★

**Canadian Painting and Sculpture**

This course examines particular aspects of nineteenth- and/or twentieth-century painting and sculpture in Canada.

Prerequisite: Art History 11.202★ (or 11.200★ or 11.201★ no longer offered) or permission of the Department.

Not offered 1986-87.

Art History 11.301★

**Contemporary Canadian Art**

This course examines in depth the art of selected groups and individuals working in Canada from the Second World War to the present.

Not offered 1986-87.

Art History 11.302★

**Canadian Architecture**

Offered in the School of Architecture as Architecture 76.302★.

Day division, Fall term: Lectures three hours a week.

*B. Humphreys*

Art History 11.304★

**Pre-Classical Greek Art and Archeology**

Offered in the Department of Classics as Classical Civilization 13.331★.

Day division, Fall term: Lectures two hours a week.

*T. Hodge*



Art History 11.305★

**American Architecture**

This course studies the cultural history of the United States as expressed through its architectural heritage. Selected buildings and complexes from the earliest settlements through the early twentieth century are examined.

Day division, Fall term: Lectures three hours a week.

*D. Goodreau*

Art History 11.306★

**American Painting and Sculpture**

This course studies the evolution of painting and sculpture in the United States from colonial times to the early twentieth century.

Day division, Winter term: Lectures three hours a week.

*D. Goodreau*

Art History 11.310★

**Etruscan and Roman Art**

This course studies Etruscan art and the development of Roman art and architecture through the Constantinian period. (Also listed as Classical Civilization 13.334★.)

Art History 11.314★

**Inuit Art**

This course surveys the prehistoric, historic and contemporary art of the Canadian Inuit with reference to the art of the Eskimos of Alaska and Greenland.

Evening division, Winter term: Lectures three hours a week.

*J. Blodgett*

Art History 11.315★

**North American Indian Art**

This course examines the prehistoric or historic or contemporary art of the Indian peoples of North America. Prerequisite: Art History 11.203★ or permission of the Department.

Not offered 1986-87.

Art History 11.316★

**Problems and Methods of Art History**

This course treats the various questions that the art historian may ask about a work of art and the artist. It examines and compares the methodologies used to answer these questions.

Prerequisites: Three credits in art history.

Not offered 1986-87.

Art History 11.325★

**Russian Art**

The development of Russian art is studied from its origins through the seventeenth century with an emphasis on Byzantine influences as opposed to local characteristics.

Not offered 1986-87.

Art History 11.327★

**Gothic Architecture and Monumental Sculpture**

This course investigates the sources and development of Gothic architecture and monumental sculpture in Northern and Southern Europe from its origins in the twelfth century through the fifteenth century.

Prerequisite: Art History 11.220★ or permission of the Department.

Not offered 1986-87.

Art History 11.328★

**Gothic Minor Arts**

The so-called Minor Arts of the Gothic tradition from the twelfth through the fifteenth century are studied, including stained glass, manuscripts, tapestries and embroideries, panel painting, goldsmithery and ivory carvings.

Prerequisite: Art History 11.220★ or permission of the Department.

Day division, Fall term: Lectures three hours a week.

*M. Montpetit*

Art History 11.330★

**Florentine Renaissance Art**

This course examines Florentine art in its development from late Trecento ideas to the emergence of the High Renaissance vocabulary.

Evening division, Fall term: Lectures three hours a week.

*C. Brown*

Art History 11.331★

**Venetian Renaissance Art**

This course examines the art of the Venetian Republic, from the Basilica of San Marco to the emergence of a Renaissance vocabulary with Bellini, Giorgione, Titian, Veronese and Tintoretto, within the context of North Italian painting.

Not offered 1986-87.

Art History 11.332★

**Italian Art of the High Renaissance**

This course examines the art of the principal representatives of the high Renaissance including Leonardo da Vinci, Michelangelo, Raphael, Titian and the Florentine circle of Andrea del Sarto.

Not offered 1986-87.

Art History 11.335★

**Northern Renaissance Art**

This course examines the development of Flemish and German Renaissance art.

Not offered 1986-87.

Art History 11.350★

**British Art and Architecture: 1600-1850**

This course concerns British art and architecture from the early seventeenth to the mid-nineteenth century.

Day division, Fall term: Lectures three hours a week.

*D. Goodreau*

Art History 11.355★

**Late Nineteenth-Century Art in France**

This course defines the roots of the major modern movements of early twentieth-century art through an examination of the principal artists and trends in French painting from Manet to Cézanne. Special attention is also given to the major Impressionist and Post-Impressionist artists including Monet, Renoir, Seurat, van Gogh and Gauguin.

Day division, Winter term: Lectures three hours a week.

*C. Brown*

Art History 11.360★

**Art Since 1945**

This course treats major artists and artistic movements from 1945 to the present. Emphasis is placed on the United States.

Not offered 1986-87.

Art History 11.368★

**Modern Architecture: The Nineteenth Century**

This course covers selected topics in nineteenth-century architecture and urban planning in Europe and North America from the Gothic Revival to American commercial architecture.

Evening division, Fall term: Lectures three hours a week.  
*M. Bressani*

Art History 11.369★

**Modern Architecture: The Twentieth Century**

This course considers The Bauhaus and the New Brutalism, and also includes such architects as Gaudi, Wright, Le Corbusier, Mies van der Rohe and Buckminster Fuller.

Evening division, Winter term: Lectures three hours a week.  
*M. Bressani*

Art History 11.375★

**Seminar on a Selected Museum Exhibition**

This seminar focuses on a major exhibition held at a local museum. Students enrolled in this course are expected to bear all travel and other costs arising from required visits to the museum. The topic of this course in 1986-87 is papal patronage, to complement the exhibition, "Vatican splendour: masterpieces of Baroque art," at the Art Gallery of Ontario.

Day division, Fall term: Lectures three hours a week.  
*V. Vaillancourt*

Art History 11.376★

**Seminar on a Selected Museum Exhibition**

This seminar focuses on a major exhibition held at a local museum. Students enrolled in this course are expected to bear all travel and other costs arising from required visits to the museum.  
Not offered 1986-87.

Art History 11.390★, 11.391★, 11.392★

**Practicum in Art History**

An art history option enabling students to gain practical experience in the discipline by working on specific projects under the supervision of the staff of one of the museums or related settings in the Ottawa area. Readings, discussions and reports are integrated with the program in the different settings. Available institutions and positions within them on particular projects may change from year to year. A maximum of one credit of practicum may be offered in fulfillment of art history requirements.

Prerequisite: Majors and Honours with Third- or Fourth-year standing and a B+ or better average in Art History courses, or permission of the Department. Art History 11.390★ is normally a prerequisite for 11.391★ and 11.392★.

*N. Luckyj*

Art History 11.400★

**Topics in Canadian Art**

This seminar exam in detail the contribution of selected individuals or movements in Canadian art in the context of Canadian society and the history of modern art. The topic for 1986-87 is *Canadian Women Artists*.

Prerequisite: Art History 11.202★ or 11.300★ or 11.301★ or permission of the Department.  
Day division, Winter term: Seminar three hours a week.  
*N. Luckyj*

Art History 11.403★

**Topics in Canadian Native Art**

This course deals with selected problems in Canadian Inuit or Indian art.

Prerequisite: Art History 11.203★ or permission of the Department.  
Not offered 1986-87.

Art History 11.406★

**Topics in American Art**

This seminar examines selected aspects of American art and architecture. The topic for 1986-87 is *Abstract Expressionism*.

Day division, Winter term: Seminar three hours a week.  
*R. Mesley*

Art History 11.422★

**Topics in Eastern Medieval Art**

This seminar studies aspects of Eastern Medieval art and their influences in Western Europe.

Prerequisite: Art History 11.221★ or permission of the Department.  
Not offered 1986-87.

Art History 11.423★

**Topics in Western Medieval Art**

This seminar focuses on aspects of Western Medieval art and their relationship to the Eastern Mediterranean area.

Prerequisite: Art History 11.220★ or permission of the Department.  
Evening division, Winter term: Seminar two hours a week.

*M. Montpetit*

Art History 11.431★

**Topics in Iconography**

In this course attention is focused on selected problems in the meaning of visual images and available textual sources. In 1986-87 the course deals with religious iconography: biblical themes in Western art.

Day division, Fall term: Lectures three hours a week.  
*C. Brown*

Art History 11.435★

**Topics in Renaissance Art**

This seminar deals with selected aspects of Renaissance art and their influence. In 1986-87, the topic is *Art and the Courts: Princely Themes in the Fifteenth and Sixteenth Centuries*.

Day division, Winter term: Seminar three hours a week.  
*C. Brown*

Art History 11.450

**Topics in British Romantic Art**

This seminar examines selected aspects of British art and architecture of the eighteenth and early nineteenth centuries. The focus of the course in 1986-87 is the rise and development of the British school of landscape painting in the eighteenth and nineteenth centuries. A study of media and techniques is included, with emphasis on watercolour.

Prerequisite: Art History 11.350★.  
Day division, Winter term: Seminar two hours a week.  
*D. Goodreau*

Art History 11.452★

**Topics in Spanish Art**

This seminar examines selected aspects of Spanish art. In 1986-87 this course examines the style and imagery of Goya's paintings and graphics, as well as the range of



attitudes and opinions that critics, artists and art historians have held about Goya's work.

Prerequisite: Honours standing in Art History or permission of the Department.

Evening division, Fall term: Seminar two hours a week.  
D. Goodreau

Art History 11.455★

**Topics in Nineteenth-Century European Art**

This course examines selected aspects of nineteenth-century European art. In 1986-87, the topic is *Odilon Redon in the context of French Symbolism*.

Prerequisite: Art History 11.250★ or 11.355★ or permission of the Department.

Summer Evening division, Second term: Lectures six hours a week (Gauguin).

Day division, Fall term: Seminar three hours a week.

R. Mesley

Art History 11.461★

**Topics in Twentieth-Century Art**

This seminar examines selected aspects of twentieth-century art. The topic for 1986-87 is *Stieglitz and his circle*.

Prerequisite: Art History 11.260★ or permission of the Department.

Evening division, Winter term: Seminar three hours a week.

R. Mesley

Art History 11.470★

**Historical Studies in Drawing**

The history of the drawing as a work of art from the fifteenth century to the present is studied in this seminar, using in large part original examples from the National Gallery of Canada. Emphasis is placed on the expressive possibilities of the various media and on connoisseurship. Enrolment limited.

Prerequisite: Permission of the Department.

Not offered 1986-87.

Art History 11.475★

**Seminar on a Selected Museum Exhibition**

This seminar focuses on a major exhibition held at a local museum. Students enrolled in this course are expected to bear all travel and other costs arising from required visits to the museum. The topic of this course in 1986-87 is papal patronage to complement the exhibition, "Vatican splendour: masterpieces of Baroque art," at the Art Gallery of Ontario.

Prerequisite: Fourth-year Honours standing.

Day division, Fall term: Lectures three hours a week.

V. Vaillancourt

Art History 11.476★

**Seminar on a Selected Museum Exhibition**

This seminar focuses on a major exhibition held at a local museum. Students enrolled in this course are expected to bear all travel and other costs arising from required visits to the museum.

Prerequisite: Fourth-year Honours standing.

Not offered 1986-87.

Art History 11.487★

**Topics in Art Criticism**

This course analyzes various types of approaches to art criticism. The course focuses on theories such as formalism and expressionism, and on the problem of descriptive vocabulary. Particular attention is given to such terms as "form" and "unity" which are the basis for evaluation and

meaning and knowledge in art.

Prerequisite: Permission of the Department.

Not offered 1986-87.

Art History 11.490★

**Directed Readings and Research**

This course consists of supervised readings and research projects in a specific area of art history to be chosen in consultation with the Honours Supervisor. Participation in this course may require attendance in a course offered at a lower level. Guidelines must be obtained from the Honours Supervisor prior to registration.

Prerequisite: Fourth-year Honours standing and permission of the Department.

Day and Evening divisions, Fall term.

Art History 11.491★

**Directed Readings and Research**

This course consists of supervised readings and research projects in a specific area of art history to be chosen in consultation with the Honours Supervisor. Participation in this course may require attendance in a course offered at a lower level. Guidelines must be obtained from the Honours supervisor prior to registration.

Prerequisite: Fourth-year Honours standing and permission of the Department.

Day and Evening divisions, Winter term.

Art History 11.499

**Honours Research Essay**

This course, designed for independent research under the supervision of a member of the Department, is open to those students with B+ standing in their art history courses. An essay of approximately 10,000 words is the usual assignment. A written project outline, approved by the supervisor, must be submitted to the Honours Supervisor by the last day for course changes.

Prerequisite: Fourth-year Honours standing and permission of the Department.

Day and Evening divisions.

# Biology

Associate Chairman (Undergraduate Studies)  
To be announced

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## General Information

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In addition to offering Honours and Major B.Sc. programs for students in experimental science, the Biology Department (Faculty of Science) offers Honours and Major B.A. degrees either in Biology alone or combined with other programs in the Faculties of Arts and Social Sciences. The B.A. in Biology places less emphasis on support from the physical sciences, but allows students to relate their special knowledge of biology to other disciplines in the social sciences or humanities in a three-year program. The four-year Honours program allows the development of particular interests in depth and initiates the student into research in the field, laboratory or library. Generally the Honours degree is a prerequisite for admission to graduate programs and is an advantage for those planning a professional career in teaching or administration in biology, including the health sciences, agriculture and environmental science.

The Combined Honours and Majors programs allow the simultaneous specialization in Biology and one of the humanities or social sciences. Because of the social and cultural impact of science and technology, interdisciplinary combinations such as Biology and Economics, Geography, History, Journalism, Law, Mathematics, Philosophy, Political Science, Psychology, Religion or Sociology-Anthropology should better qualify one to grapple with futurology and demography, biogeography and the environment, legal implications of pollution or biomedical engineering, science policy, comparative psychology, social evolution, or the historical, philosophical and spiritual implications of the biological revolution.

It is desirable to enter an Honours program as soon after First year as possible, to ensure that the sequence of selected courses will conform to degree requirements (p. 88). Students pursuing the programs must arrange their courses in consultation with the Chairman or Associate Chairman of the department or departments according to one of the patterns outlined below.

For complete information on programs and courses offered by the Department of Biology see pp. 337-344.

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## Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all departmental regulations and requirements as set out below.

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## Bachelor of Arts Biology Programs

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### Major Program

Fifteen credits to include:

1. Six Biology credits to include Biology 61.100† or 61.101†, 61.201★, 61.202★, 61.215, 61.220★, 61.261★, 61.361★, 61.391★ or 61.392★;
2. Chemistry 65.100;
3. One additional Science credit not in Biology;

4. At least three credits from any one department in either the Faculties of Arts or Social Sciences and one additional credit from any department in either of the Faculties of Arts or Social Sciences;

5. Three free-option credits, one of which must be at the 200 level or above.

†See *Notes on Programs*, p. 339.

### Combined Major Program

Fifteen credits to include:

1. Five Biology credits: Biology 61.100† or 61.101†, 61.201★, 61.202★, 61.215, 61.220★, 61.261★, 61.361★, 61.391★ or 61.392★;
2. Chemistry 65.100;
3. One additional Science credit not in Biology;
4. The requirement for a Combined Major in either of the Faculties of Arts or Social Sciences;
5. Three or four free-option credits.

†See *Notes on Programs*, p. 339.

### Honours Program

Twenty credits to include:

1. Seven Biology credits including Biology 61.100† or 61.101†, 61.201★, 61.202★, 61.215, 61.220★, 61.261★, 61.361★, 61.391★ or 61.392★, 61.497 or 61.498, and one other 400-level credit;
2. Chemistry 65.100;
3. Two additional Science credits not in Biology, including one above the 100 level;
4. Six credits offered by either Faculties of Arts or Social Sciences to include at least three offered by one department and at least two at the 200 level or above;
5. Two 300- or 400-level credits approved by a Biology faculty member working in the student's area of specialization;
6. Two free-option credits.

†See *Notes on Programs*, p. 339.

### Combined Honours Program

Twenty credits to include:

1. Six Biology credits including Biology 61.100† or 61.101†, 61.201★, 61.202★, 61.215, 61.220★, 61.261★, 61.361★, 61.391★ or 61.392★ and one at the 400 level;
2. Chemistry 65.100;
3. Two additional Science credits not in Biology, including one above the 100 level;
4. Seven to nine credits selected from those offered by the Faculties of Arts or Social Sciences, to include the requirement for a Combined Honours in another department, usually at least six credits;
5. An Honours project (Biology 61.497, 61.498, or equivalent from the student's other Honours department);
6. One to three free-option credits (depending upon the requirements for 4, above).

†See *Notes on Programs*, p. 339.



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## Officers of the School

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### *Director*

A.J. Bailetti

### *Assistant to the Director*

L.Y. Fallis

### *Departmental Administrator*

M. Wissell

### *Supervisor of Honours Program*

J.B. Waugh

### *Professors*

G.H. Haines

E. Menipaz

### *Associate Professors*

A.J. Bailetti

J.R. Callahan

L. Heslop

M.N. Kiggundu

F. Kirk

W.M. Lawson

N.G. Papadopoulos

A.L. Riding

W.B. Thorngate

J.B. Waugh

W.L. Weber

### *Assistant Professors*

D. Cray

V.M. Jog

G.E. Kersten

U. Kumar

V. Kumar

G.R. Mallory

J. Marshall

W. Michalowski

### *Lecturer*

B.A. Conheady

### *Instructors*

D. Herauf

C. Hobbs

### *Visiting Professor*

J. Kapur

### *Sessional Lecturers*

M. Berns

A. Bishai

J.P. Broere

C. Byrd

P. Clark

R. Cooper

J. Cosier

R.H. Dowdell

G. Dupont

A. Gibbons

H.G. Giese

S.H. Goldstein

J.K. Hodgson

J.A. Nason

J. Prokaska

Y. Roger

N. Shaw

C.G. Watt

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## Bachelor of Commerce with Honours

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The Bachelor of Commerce degree is an Honours program and candidates are required to complete a four-year program of studies after Senior Matriculation.

The Business program is designed to provide a broad foundation in the business academic disciplines. The required courses introduce the student to the relevant academic disciplines and to the functional areas of management. All students, in consultation with the faculty of the School, may structure the balance of their program to build upon this foundation in accordance with their personal career objectives and areas of interest. Suggested options for selected areas of interest are listed below. (See *Selected Fields of Interest*.)

The program is offered mainly in the Day division; however, many course offerings are also available in the Evening division. Each student must spend a minimum of one year as a full-time student in the Day division.

Students who may wish to proceed to a Master's Degree in Public Administration at Carleton University should refer to the section entitled *M.A. in Public Administration* given below. Students interested in pursuing graduate studies in business should refer to the sections entitled *Master of Management Studies* and *Masters in Business Administration*.

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## Graduation Requirements

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all School regulations and requirements as set out below.

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## Admission Requirements

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### First Year

Completion of Qualifying University year with a grade-point average of 7.0 or better including Mathematics 69.006★ and 69.007★; or

The Ontario Secondary School Honour Graduation Diploma with a minimum of 65% average and including Functions and Calculus.

It should be noted that the number of student spaces in the School is limited. Thus, it may not be possible to grant admission to all applicants who meet the foregoing requirements. Admissions will, therefore, be on a selective basis with preference given to those candidates who show the highest promise of success in the program.

Students who fail to meet the standards required for entry to the Honours program may elect to take their First year in the three-year Bachelor of Arts program. The First-year program should include Business 42.101★, 42.102★, Economics 43.100 and Mathematics 69.109★ and 69.119★. Application may then be made for admission to the Second year of the Business program. The requirements for admission to Honours will apply.

### Second and Subsequent Years

Applications for admission to the Second or subsequent years will be assessed on their merits. Minimum transfer requirements are stated on p. 88. Advanced standing will

be granted only for those courses that are assessed as appropriate for the Business program.

Course Requirements

Candidates for the Bachelor of Commerce degree take a total of 25 courses after Junior Matriculation or 20 after Senior Matriculation.

Students with a prior university degree will receive advanced standing where appropriate. Acceptance in the program will be governed by the standards required for entry to the Honours program; however a minimum of seven additional courses will be required, following admission to the program, for the Bachelor of Commerce degree.

Students who propose to include language courses in their program must obtain prior approval from the School.

Academic Standing

Students must maintain a C+ average in their Honours courses each year and a C Overall.

Entry to Fourth-level Business courses will be governed by academic performance in prerequisite courses. The minimum acceptable grade for entry into such courses is a grade of C- in the designated prerequisites.

The attention of students is drawn to the regulations relating to Honours on pp. 88-89 of the Calendar.

Course Load

The normal course load for a full-time undergraduate student during the Winter session is five credits. In the Business program slightly more than half of these credits are obligatory. Subject to program approval, the remaining courses may be selected in the light of individual preference.

Course Selection

Required (Core) Courses

Under the course credit system there is no promotion from one year to the next after First year. The required course listings for Second year and subsequent years, then, reflect a recommended course pattern; individual students may wish to adapt the timing of individual courses to meet their own particular needs or preferences.

First Year

Business 42.100	Introduction to Accounting
Business 42.181★	Business Writing
Business 42.140★	Introduction to Computers for Business Students
Economics 43.100	Introduction to Economics
Mathematics 69.109★	Calculus: With Applications to Business and Economics
Mathematics 69.119★	Algebra: With Applications to Business and Economics

Psychology 49.100	Introduction to Psychology
or	
Sociology 53.100	Introduction to Sociology

All First-year Bachelor of Commerce students are required to take both Business 42.180★ and 42.181★. However, students may be exempted from Business 42.180★ by means of a placement test offered in the Summer and during the first week of Fall term. Those exempted from Business 42.180★ should register in 42.181★ in the Fall term. Those required to take Business 42.180★ must do so in the Fall in order to be eligible to take 42.181★ in the Winter term.

Second Year

Business 42.210★	Management and Organizational Behaviour
Business 42.228★	An Introduction to Marketing
Business 42.230★	Introduction to Management Science
Business 42.240★	An Introduction to Business Information Systems
Business 42.250★	An Introduction to Business Finance
Economics 43.202★	Intermediate Microeconomics I
Economics 43.212★	Intermediate Macroeconomics I
Law 51.231★	Business Law I
Economics 43.220	Statistical Methods in the Social Sciences
or	
Mathematics 69.266★	Business Statistics I and Business Statistics II
69.267★	

Third Year

Business 42.311★	Micro Organizational Behaviour
Business 42.317★	Introduction to Industrial Relations
Business 42.337★	Operations Management

Fourth Year

Business 42.469★	Business Policy Seminar
and	
an additional two and one-half 400-level credits of which at least one and a half credits must be selected from courses offered by the School of Business.	

Selected Fields of Interest

The following sets out a listing of suggested options by area of interest. The courses listed are *intended to provide a general guideline only*; consultation with members of the School of Business is recommended.

Students are urged to plan in advance in order to accommodate course prerequisites and fulfil all graduation requirements.

The School of Business offers various sections of Business 42.460★ - 42.464★, Topics in Management Studies. The course content for each section may vary from year to year. Course contents are publicized only before registration. The suggestions offered below do not include the Business 42.460★ - 42.464★ offerings; however, students may elect to take these courses as partial fulfilment of their 400-level Business requirement. Further information on Topics in Management Studies may be obtained from the School of Business.



## ■ Accounting

This area of study is designed for students interested in career opportunities in professional accounting: financial accounting and auditing, or management accounting in the private or public sectors.

Students who intend to proceed to a professional accounting qualification as a Chartered Accountant (C.A.), Certified General Accountant (C.G.A.), or Registered Industrial Accountant (R.I.A.), should consult one of the faculty members in accounting.

### Second Year

#### Core Courses

Business 42.210★, 42.230★, 42.240★, 42.250★.

Economics 43.202★, 43.212★;

Economics 43.220 or Mathematics 69.266★ and 69.267★.

#### Option

Business 42.200.

### Third Year

#### Core Courses

Business 42.228★, 42.311★, 42.317★, 42.337★.

#### Options

Business 42.301★, 42.302★, 42.350★;

Law 51.231★, and 51.232★.

Students may select their remaining half credit from a variety of courses offered by the School of Business and other academic units. Courses that may be of interest to students who select the accounting option include Business 42.342★ and 42.440★.

### Fourth Year

#### Core Course

Business 42.469★.

#### Options

Business 42.308★, 42.400★, 42.407★;

Law 51.324.

A minimum of one credit from:

Business 42.309★, 42.401★, 42.440★, 42.442★.

Students may select their remaining credits from a wide variety of courses offered by the School of Business and other academic units.

## ■ Finance

This area of study is designed for students interested in career opportunities in corporate finance, investment management and the management of financial institutions.

Students are advised to follow the core course requirements for First and Second years.

### Third Year

#### Core Courses

Business 42.311★, 42.317★, 42.337★.

#### Options

Business 42.350★ and 42.352★.

Two and a half credits from:

Business 42.200, 42.342★, 42.348★;

Economics 43.203★, 43.213★;

Mathematics 69.351;

Philosophy 32.203★.

### Fourth Year

#### Core Courses

Business 42.469★.

#### Options

Business 42.450★ and 42.452★.

A minimum of one and a half credits from:

Business 42.435★, 42.440★, 42.442★, 42.446★, 42.453★;

Economics 43.420★.

Students may select their remaining credits from a wide variety of courses offered by the School of Business and other academic units. Courses that may be of interest to students who select the finance option include:

Business 42.308★, 42.327★, 42.360★, 42.361★;

Economics 43.362★, 43.485;

Law 51.321, 51.324, 51.341★ 51.342★.

## ■ General

This area of study is designed for students interested in career opportunities that integrate various business disciplines and for owner/managers of small and medium size business.

Students are advised to follow the core course requirements for First and Second years.

### Third Year

#### Core Courses

Business 42.311★, 42.317★, 42.337★.

#### Options

Business 42.308★, 42.312★, 42.325★, 42.360★, 42.361★.

Students may select their remaining credit from a wide variety of courses offered by academic units other than the School of Business.

### Fourth Year

#### Core Course

Business 42.469★.

#### Options

Business 42.352★, 42.413★, 42.428★, 42.440★.

Students may select their remaining two and a half credits from a wide variety of courses offered by the School of Business and other academic units.

## ■ Human Resources Management

This area of study is designed for students interested in personnel management, human resources management and management of public and private sector organizations.

### Second Year

#### Core Courses

Business 42.210★, 42.240★, 42.250★;

Economics 43.202★, 43.212★;

Economics 43.220 or Mathematics 69.266★ and 69.267★;

Law 51.231★.

#### Option

Sociology 53.200★

### Third Year

#### Core Courses

Business 42.228★, 42.230★, 42.311★, 42.317★, 42.337★.

#### Options

Business 42.312★;

Two credits from:

Business 42.361★;  
Psychology 49.260★, 49.345★, 49.372★;  
Sociology 53.346★, 53.355, 53.370.

#### Fourth Year

*Core Course*  
Business 42.469★.

*Options*  
Business 42.413★, 42.414★, 42.415★;  
One credit from:  
Economics 43.465;  
Law 51.345★, 51.440★.

Students may select their remaining credits from a wide variety of courses offered by the School of Business and other academic units. Courses that may be of interest to students who select the human resources management option include:

Business 42.360★, 42.440★;  
Economics 43.356★;  
Psychology 49.311★.

#### ■ Information Systems

This area of study is designed for students interested in career opportunities in data processing, systems analysis, decision support systems, computer auditing and management information systems.

#### Second Year

*Core Courses*  
Business 42.228★, 42.230★, 42.240★, 42.250★;  
Economics 43.202★, 43.212★;  
Economics 43.220 or Mathematics 69.266★ and 69.267★.

*Options*  
Computer Science 95.106★, 95.202★.

#### Third Year

*Core Courses*  
Business 42.210★, 42.311★, 42.317★, 42.337★;  
Law 51.231★.

*Options*  
Business 42.342★, 42.348★;  
Computer Science 95.204★;  
Engineering 94.304★.

Students may select their remaining half credit from a wide variety of courses offered by the School of Business and other academic units.

#### Fourth Year

*Core Course*  
Business 42.469★.

*Options*  
Business 42.440★, 42.442★, 42.446★;  
Computer Science 95.403★.

Students may select their remaining two and a half credits from a wide variety of courses offered by the School of Business and other academic units.

#### ■ International Business

This area of study is designed for students interested in career opportunities with multinational corporations or with public sector organizations with business interests abroad.

#### Second Year

*Core Courses*  
Business 42.210★, 42.240★;  
Economics 43.202★ and 43.212★;  
Economics 43.220 or Mathematics 69.266★ and 69.267★;  
Law 51.231★, 51.232★.

*Option*  
Political Science 47.260.

#### Third Year

*Core Courses*  
Business 42.228★, 42.230★, 42.250★, 42.311★, 42.317★, 42.337★.

*Options*  
Law 51.322;  
Political Science 47.360★, 47.361★.

#### Fourth Year

*Core Course*  
Business 42.469★.

*Options*  
Business 42.413★, 42.425★, 42.440★;  
Law 51.420★ and 51.421★;  
Economics 43.360★, 43.361★.

Students may select their remaining credit from a variety of courses offered by the School of Business and other academic units.

#### ■ Marketing

This area of study is designed for students interested in an international, behavioural, economic, quantitative or research approach to marketing.

#### Second Year

*Core Courses*  
Business 42.210★, 42.228★, 42.240★, 42.250★;  
Economics 43.202★;  
Economics 43.220 or Mathematics 69.266★ and 69.267★.

*Options*  
One and a half credits from:  
Industrial Design 85.100★ and 85.101★;  
Mass Communications 27.111;  
Philosophy 32.203★;  
Political Science 47.100;  
Psychology 49.311★;  
Psychology 49.210★ or Sociology 53.210;  
Sociology-Anthropology 56.220.

#### Third Year

*Core Courses*  
Business 42.230★, 42.311★;  
Economics 43.212★;  
Law 51.231★.

*Options*  
Business 42.325★, 42.327★.

Two credits from:  
Business 42.312★, 42.342★, 42.348★, 42.350★, 42.352★, 42.360★, 42.361★;  
Economics 43.320★, 43.360★, 43.361★;  
Industrial Design 85.210, 85.220, 85.312★, 85.313★;  
Law 51.232★;  
Mathematics 69.350, 69.351;  
Political Science 47.260;  
Psychology 49.260★, 49.270★;  
Sociology 53.251★, 53.254★.



## Fourth Year

### Core Courses

Business 42.317★, 42.337★, 42.469★.

### Options

Business 42.425★, 42.426, 42.428★.

A minimum of a half credit from:

Business 42.413★, 42.435★, 42.440★, 42.442★, 42.446★, 42.450★, 42.452★;  
Economics 43.451★;  
Mathematics 70.452★, 70.453★, 70.456★.

Students may select their remaining credits from a wide variety of offerings. Courses that may be of interest to students who select the marketing option include:

Law 51.320, 51.322, 51.325★;  
Political Science 47.360★;  
Psychology 49.372★;  
Sociology 53.345★, 53.348★, 53.351★.

## ■ Operations Management

This area of study is recommended for students interested in production, operations research and management science. Courses in this option stress the use of quantitative methods in business.

## Second Year

### Core Courses

Business 42.228★, 42.230★, 42.240★, 42.250★;  
Economics 43.202★, 43.212★;  
Economics 43.220 or Mathematics 69.266★ and 69.267★.

### Options

Mathematics 69.207★, 69.217★.

## Third Year

### Core Courses

Business 42.210★, 42.337★.

### Options

Four credits from:

Business 42.308★, 42.327★, 42.342★, 42.348★, 42.350★, 42.352★;  
Economics 43.203★;  
Mathematics 69.208★, 69.351, 70.260.

## Fourth Year

### Core Courses

Business 42.311★, 42.317★, 42.469★;  
Law 51.231★.

### Options

A minimum of two and a half credits from:

Business 42.435★, 42.440★, 42.442★, 42.446★, 42.450★, 42.452★;  
Economics 43.485.

Students may select their remaining credits from a wide variety of courses offered by the School of Business and other academic units. Courses that may be of interest to students who select the operations management option include:

Engineering 94.405★;  
Mathematics 69.381★, 70.356★;  
Philosophy 32.203★.

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## Master of Management Studies

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The School of Business offers a graduate program in the field of management leading to the Master of Management Studies (M.M.S.).

The focus of the program is applied research directed toward developing productivity and innovation in Canadian business. The program of studies will develop in students the conceptual and methodological skills required to undertake, manage and evaluate business research. It is designed to prepare students for managerial and policy roles in Canadian business. The applied research skills developed in the program are deemed to be essential if Canadian business is to be more productive and innovative in the increasingly competitive and complex world economy.

The M.M.S. program requires successful completion of the equivalent of 10 half-credit courses. Students must complete seven half-credit courses of which at least five must be at the 500 level or above and a thesis equivalent to three half credits.

The areas of specialization within the program are:

Business Information Systems  
Finance  
Management  
Marketing

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## M.A. in Public Administration

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Students completing a Bachelor of Commerce degree program with high second class standing may complete the M.A. in Public Administration offered at Carleton University in one year. Students interested in pursuing the Masters degree should take as many of the following courses as possible for their free undergraduate options:

Political Science 47.200 Canadian Government and Politics;  
Law 51.456★ Administrative Law I;  
Political Science 47.340 Canadian Public Administration;  
Political Science 47.401 Policy Making in Canada.

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## Masters in Business Administration

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Most Canadian universities offering an M.B.A. degree will grant advanced standing to applicants with a Bachelor of Commerce (Honours) degree. Students interested in pursuing an M.B.A. should select their courses in consultation with the members of the School of Business.

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## Courses Offered

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Some of the following courses are cross-listed from other sections of the calendar. Business students should register in cross-listed courses under the Business number (prefix 42).

In all courses with computer programming assignments, students will find it necessary to be on campus at other than the lecture periods to make use of computing facilities.

Business 42.100

**An Introduction to Accounting**

A course open only to students registered in the business program, and to declared Major or Honours students in economics. Accounting method; concepts of income determination and asset valuation; accounting information for managerial decisions.

Precludes additional credit for Business 42.101★ and 42.102★.

Day division: Lectures three hours a week.

Business 42.101★

**Principles of Financial Accounting**

Discussion of the concepts of asset valuation and income measurement underlying the preparations and interpretation of financial statements.

Precludes additional credit for Business 42.100.

Day and Evening divisions, Fall term: Lectures three hours a week.

Business 42.102★

**Management Accounting**

An introduction to the problems of the use of accounting data for the purposes of planning and control of operations.

Precludes additional credit for Business 42.100.

Prerequisite: Business 42.101★.

Day and Evening divisions, Winter term: Lectures three hours a week.

Business 42.140★

**Introduction to Computers for Business Students**

An introduction to the use of computers in problem solving and data processing. Algorithms for file handling, report generations, elementary numerical computations in business. Information flows within business, fundamentals of programming for business applications. Students prepare and execute interactive programs to solve problems in the course.

Precludes additional credit for Computer Science 95.100★, 95.101★, and 95.104★ (no longer offered).

Prerequisite: Mathematics 69.109★ or equivalent (grade of C- or better).

Day division, Winter term: Lectures three hours a week.

Business 42.180★

**Elements of English Writing**

The course is designed to improve English communication skills. Emphasis is placed on the development of one's ability to express ideas effectively by learning and practising the basic elements of the English language and composition. This course requirement will be waived for students who pass a placement test. Business students only.

Day division, Fall term: Lectures three hours a week.

Business 42.181★

**Business Writing**

The course is designed to develop skills in effective business communications. This is accomplished through learning and practice in the areas of researching, planning and writing of business reports, briefs, etc.; documentation of reports; examination of psychological implications in business correspondence; organization of reports and verbal presentations, etc. Business students only.

Prerequisite: Business 42.180★.

Day division, Fall and Winter terms: Lectures three hours a week.

Business 42.200

**Intermediate Accounting**

Further development of problems of revenue recognition and asset valuations.

Prerequisite: Business 42.100 (grade of C- or better) or Business 42.101★ and 42.102★ (grade of C- or better in both courses).

Day and Evening division: Lectures three hours a week.

Business 42.210★

**Management and Organizational Behaviour**

The course examines planning, decision-making, organizing, controlling, motivation, leadership, small group interaction and communication in organizations.

Open to students registered in the School of Business.

Precludes additional credit for Business 42.214★.

Prerequisites: Sociology 53.100 or Psychology 49.100 and Economics 43.100 (a grade of C- or better in both courses).

Day and Evening divisions, Fall and Winter terms: Lectures and discussion groups three hours a week.

Business 42.214★

**Introduction to Management**

The course provides a broad introduction to management, including such topics as planning, decision-making, organizing, controlling, operations management, staffing and quantitative management models for forecasting and program evaluation.

This course does not carry credit for Business students.

Precludes additional credit for Business 42.210★.

Prerequisites: One introductory university course in the social sciences.

Evening division, Fall and Winter terms: Lectures and discussion groups three hours a week.

Business 42.224★

**Basic Marketing**

A broad introduction to the basic problems and practices in marketing, for students without a background in accounting and business. Focus is on marketing strategy, planning, packaging, branding and promotion at the individual firm level.

This course does not carry credit for Business students.

Prerequisite: One introductory university course in the social sciences.

Evening division, Winter term: Lectures three hours a week.

Business 42.228★

**Introduction to Marketing**

An overview of the marketing function within the firm is sought. Promotion, product design, pricing and distribution channels are examined as key elements of the marketing mix. Consumer buyer behaviour, trends in retailing, wholesaling, sales force management and marketing research are other topics to be reviewed. Case studies are used to supplement class and reading material.

Prerequisites: Business 42.100 (or 42.101★ and 42.102★), Economics 43.100 and one of Psychology 49.100 or Sociology 53.100 (a grade of C- or better in all of these courses).

Day and Evening divisions, Fall and Winter terms: Lectures three hours a week.

Business 42.230★

**Introduction to Management Science**

Introduction to management science techniques that are routinely used as decision aids in government and industry. The course examines linear programming tech-



niques, decision analysis and simulation. Students are introduced to quantitative models for decision making.

Precludes additional credit for Economics 43.404★.

Prerequisites: Business 42.140★ or Computer Science 95.105★ and Mathematics 69.119★ or equivalent (a grade of C- or better required in Mathematics 69.119★ or equivalent).

Day and Evening divisions, Fall and Winter terms: Lectures three hours a week.

#### Business 42.240★

##### **Business Information Systems**

Students are introduced to the role of information systems in the modern business. Case studies and assignments are used to examine the information-processing requirements of each of the major functional areas. Selected business applications are analyzed to illustrate how the information systems requirements for manual and automated processing are translated into the hardware and software requirements of business firms. Students are required to design and implement a prototype information system.

Precludes additional credit for Business 42.290★ or Computer Science 95.290★.

Prerequisites: Business 42.100 (or 42.101★ and 42.102★) and one of Business 42.140★ or Computer Science 95.105★ (grade of C- or better in all of these courses).

Day and Evening divisions, Fall and Winter terms: Lectures three hours a week.

#### Business 42.250★

##### **Introduction to Business Finance**

A study of business firms' financing, capital investment and dividend policy decisions, cost of capital and short-term asset management problems. (Also listed as Economics 43.250★.)

Prerequisites: Economics 43.100, Business 42.100 (or 42.101★ and 42.102★) and Mathematics 69.109★ and 69.119★ or equivalent (a grade of C- or better in all of these courses).

Day and Evening divisions, Fall and Winter terms: Lectures three hours a week.

#### Business 42.301★

##### **Accounting for Business Combinations**

Consideration of accounting problems associated with business combinations. Particular attention is given to the preparation of consolidated financial statements. Discussion may also extend to financial reporting and diversified companies, reorganizations, etc. Selection of some topics may vary from year to year.

Prerequisite: Business 42.200.

Day and Evening divisions, Fall and Winter terms: Lectures and seminars three hours a week.

#### Business 42.302★

##### **Financial Reporting Problems**

Discussion and analysis of selected problems relating to the presentation and interpretation of accounting information on financial position and operating performance. Material for discussion is drawn from real situations and from cases. Enrolment in this course may be restricted to 30 students per section.

Prerequisite: Business 42.200.

Day and Evening divisions, Winter term: Lectures three hours a week.

#### Business 42.308★

##### **Cost Accounting**

The use of accounting information for purposes of cost control and performance evaluation. Topics include:

analysis and control of elements of cost; design and use of job order, process cost and standard cost systems; analysis of cost variances; variable costing; cost estimation; cost evaluation.

Prerequisites: One of Business 42.100 or 42.102★ and Economics 43.220 or Mathematics 69.267★ (a grade of C- or better in both courses).

Day and Evening divisions, Fall and Winter terms: Lectures three hours a week.

#### Business 42.309★

##### **Management Accounting Systems**

Discussion of the role of accounting in the functional areas of forward planning, performance evaluation and the control of operations. Special attention is given to the problems of forecasting and long-range planning.

Prerequisite: Business 42.308★.

Day division, Winter term: Lectures three hours a week.

#### Business 42.311★

##### **Micro-Organizational Behaviour**

The course examines cognitive-behavioural models of performance, alternative theories of motivation, organizations as social structures, socio-technical systems, organization change and conflict.

Prerequisite: Business 42.210★ (a grade of C- or better), or permission of the school.

Day division, Fall and Winter terms: Lectures three hours a week.

#### Business 42.312★

##### **Personnel Management**

An examination of the personnel management function in large formal organizations, with emphasis on the private sector. Topics include manpower planning, recruitment, selection, performance evaluation, career development and training, compensation and benefits and the role of the professional personnel manager.

Prerequisite: Business 42.311★.

Day and Evening division, Fall and Winter terms: Lectures three hours a week.

#### Business Studies 42.317★

##### **Introduction to Industrial Relations**

An introduction to industrial relations covering such topics as: industrial relations systems, the functioning of trade unions, collective bargaining in Canada and Canadian public policy in industrial relations. (Also listed as Economics 43.357★.)

Prerequisite: Economics 43.100.

Day and Evening divisions, Fall and Winter terms: Lectures three hours a week.

#### Business 42.325★

##### **Marketing Communications**

Study of promotion as a communication process and a tool of marketing management. The course examines the planning of a promotional campaign, including budget development, consumer research in promotion, creative strategy, media strategy, non-product promotion, ethical issues and evaluating the effectiveness of promotional programs.

Prerequisite: Business 42.228★.

Day division, Winter term: Lectures three hours a week.

#### Business 42.327★

##### **Marketing Research**

This first course in marketing research covers such topics as: research design, questionnaire design, scales, sources of information and error, sampling techniques, basic statistical measures, measures of association, re-

gression, and an overview of multivariate methods. The pragmatic implications of marketing research are stressed, with the use of case studies and actual data analysis.

Prerequisites: Business 42.228★ and one of Economics 43.220 or Mathematics 69.267★.

Day division, Fall term: Lectures three hours a week.

Business 42.337★

### **Operations Management**

Examines the performance of the managerial activities entailed in selecting, designing, operating, controlling and updating production systems.

Prerequisites: Business 42.230★ and one of Economics 43.220 or Mathematics 69.267★ (grade of C- or better in both courses).

Day division, Fall and Winter terms: Lectures three hours a week.

Business 42.342★

### **Business Systems I**

Introduction to the methods of specification, analysis, design and implementation of computer-based information systems. Topics covered in the course include: structured analysis and design; requirements analysis; technology assessment; the systems development life cycle; project management; data analysis and design; input/output design; organizational impact; testing and integration; staffing; management.

Prerequisite: Business 42.240★.

Day division, Fall term: Lectures three hours a week.

Business 42.348★

### **Quantitative Applications of Computers in Business**

This course uses the computer as a problem-solving tool in government and business. The interactive language APL is used to formulate and implement solutions to problems in finance, marketing and operations management.

Precludes additional credit for Business 42.291★ and Computer Science 95.291★.

Prerequisites: Business 42.250★, 42.230★ and Mathematics 69.266★ or equivalent (a grade of C- or better in all three courses).

Day division, Winter term: Lectures three hours a week.

Business 42.350★

### **Corporate Finance**

An examination of the major issues in corporate finance and applied financial management. Topics include: introduction to portfolio theory, the capital asset pricing model, cost of capital, capital structure and dividend policy, lease financing, capital budgeting under uncertainty, mergers and consolidations. (Also listed as Economics 43.350★.)

Prerequisites: Business 42.250★, Economics 43.202★ and one of Economics 43.220 or Mathematics 69.267★.

Day division, Fall and Winter terms: Lectures three hours a week.

Business 42.352★

### **Principles of Investments**

Procedures and methods of investment analysis. The stock and bond markets. Government regulation of securities markets. Valuation of common stocks and fixed income securities. Options, warrants, convertibles and commodities. (Also listed as Economics 43.351★.)

Prerequisites: Business 42.250★ and Economics 43.220 or Mathematics 69.267★.

Day division, Fall and Winter terms: Lectures three hours a week.

Business 42.360★

### **Small Business Management**

This course deals with the socio-economic functions and activities of the owner-manager entrepreneur and examines the operations and nature of small businesses. Methods and models that are useful in the analysis of a small business enterprise are employed.

Prerequisites: Business 42.228★ and 42.250★.

Evening division, Winter term: Lectures three hours a week.

Business 42.361★

### **Business and Its Environment**

This course provides an integrative macro-perspective of dynamic conditions that influence Canadian business, its organization, management and operations. Environmental forces studied include consumerism and other social groups, technological developments, economic conditions, politico-governmental actions and legislation as well as such contemporary issues as ecology and pollution, "the Conserver Society" and national policies and strategies for food, energy and housing. Business in its environment is studied as a system.

Prerequisites: Economics 43.100 and one of Sociology 53.100 or Psychology 49.100.

Evening division, Fall term: Lectures three hours a week.

Business 42.400★

### **Accounting Theory**

A study of the evolution of accounting theory with emphasis on concepts of income and current issues.

Prerequisite: Business 42.200.

Day division, Fall term: Lectures three hours a week.

Business 42.401★

### **Research Topics in Accounting**

An examination of approaches to research in accounting and an evaluation of selected topics of current interest in accounting theory and accounting research.

Prerequisite: Business 42.400★ (a grade of C- or better).

Day division, Winter term: Lectures three hours a week.

Business 42.407★

### **Auditing**

A course in auditing theory, methodology and application.

Prerequisite: Business 42.200.

Day and Evening divisions, Fall term: Lectures three hours a week.

Business 42.409★

### **Auditing in an EDP Environment**

This course is intended to familiarize the student with the basic components of an EDP environment, enabling the student to gain an awareness of the impact of computerization on the audit process, and to develop an understanding of computer controls and EDP audit skills. Precludes additional credit for Economics 42.461★ taken in 1985-86 or before.

Prerequisites: Business 42.240★ and 42.407★.

Business 42.413★

### **Applied Organization Theory**

The focus is on the organization as a unit of analysis. Organizations, particularly business organizations, are analyzed from the point of view of modern administration theory. The course emphasizes management applications of various theories or organization (for example, decision, control, contingency, institutional, and modern variants of human relations theory). Analysis may utilize the traditional business case approach and/or field projects. Students learn to apply the theories in the context of the



management process.

Prerequisites: Business 42.311★ and Fourth-year Honours business standing.

Day division, Fall term: Lectures three hours a week.

#### Business 42.414★

##### **Advanced Personnel Management**

This course examines a number of personnel and human resources management topics in depth. Attention is focused on the design and analysis of personnel systems, the development and critical evaluation of human resource strategies in work organizations and the study of related current issues in the practice and literature of personnel management.

Prerequisite: Business 42.312★.

Day division: Lectures three hours a week.

#### Business 42.415★

##### **Organization Development and Change**

This course examines process and structural theories of organizational development and change. Issues of organizational effectiveness, problem solving and personnel development and renewal are considered along with strategies for and processes of bringing about change. Students are exposed to various theories and methods of individual and organizational diagnosis and intervention.

Prerequisite: Business 42.311★.

Day division: Lectures three hours a week.

#### Business 42.425★

##### **International Marketing**

A study of the marketing function in international markets from a managerial perspective. The course examines the unique political, legal, economic, socio-cultural and technological environments in foreign markets in relation to the marketing management functions of product, price, distribution, and communication strategy as well as marketing research.

Prerequisite: Business 42.228★.

#### Business 42.426

##### **Consumer Behaviour**

The traditional socio-psychological theories of consumer behaviour are examined. Stress is put on the current literature and on the fundamental theories and concepts from various disciplines. Topics include motivation, personality, perception, learning, communication of innovations, attitude theory, role theory, life style analysis, consumerism, etc.

Prerequisite: Business 42.228★.

Day division: Lectures three hours a week.

#### Business 42.428★

##### **Marketing Management**

This course emphasizes the "managerial" aspects of marketing. Such topics as: market segmentation, social and regulatory aspects in marketing, channels of distribution, industrial marketing, sales force management and other current topics are discussed in detail.

Prerequisite: Business 42.228★.

Day division, Winter term: Lectures three hours a week.

#### Business 42.435★

##### **Operations Research II**

Dynamic programming inventory models, queuing, simulation, non-linear programming. (Also listed as Economics 43.405★.)

Prerequisites: Business 42.230★ or Economics 43.404★ and Economics 43.220 or Mathematics 69.267★.

Day division, Winter term: Lectures three hours a week.

#### Business 42.439

##### **Statistical Decision Theory**

An examination of Bayesian and classical approaches to decision making under uncertainty for individuals and firms. (Offered in the Department of Economics as Economics 43.406★ and 43.407★. Students are advised that it is preferable to take Economics 43.406★ prior to 43.407★.)

Prerequisites: Economics 43.220 and Mathematics 69.107★, and 69.117★ or 69.127★ or 69.109★ and 69.119★.

#### Business 42.440★

##### **Management Information Systems**

An in-depth examination of the design, implementation and evaluation of management information systems. Topics to be discussed: internal control; periodic versus event-oriented systems; small business accounting systems; EDP auditing; electronic funds transfer; computer-based financial forecasts; and charging for EDP services.

Prerequisite: Business 42.240★.

#### Business 42.442★

##### **Business Systems II**

This is a data-processing project course. Students are required to form teams with the purpose of designing and implementing a typical business information system. Projects are mostly drawn from actual problems suggested by local business and institutions.

Prerequisite: Business 42.342★.

Day division, Fall term: Lectures three hours a week.

#### Business 42.446★

##### **Decision Support Systems**

Design, implementation and deployment of interactive decision support systems. Topics covered: models of decision making; forecasting; simulation; data banks; message and text systems; business graphics; business information models; software selection, knowledge based systems; and management of the DSS function.

Prerequisites: Business 42.230★ and 42.240★ (a grade of C- or better in both courses).

Day division, Winter term: Lectures three hours a week.

#### Business 42.450★

##### **Advanced Corporate Finance**

An in-depth examination of some of the major theoretical issues in corporate finance. This course requires analyses and presentations of both articles from the finance literature and case studies. (Also listed as Economics 43.408★.)

Prerequisite: Business 42.350★.

Day division, Winter term: Lectures three hours a week.

#### Business 42.452★

##### **Investment Management**

Analysis of investment requirements for individuals and institutional investors. Liquidity, risk and return. Portfolio design, construction, management and control. Performance measurement. Capital market theory. (Also listed as Economics 43.411★.)

Prerequisite: Business 42.352★.

Day division, Winter term: Lectures three hours a week.

#### Business 42.453★

##### **Finance and Capital Markets**

The workings and structure of Canada's capital markets with particular reference to differing classes of institutional lenders and borrowers; relationships of non-bank financial intermediaries to the banking system, regulatory agencies and the public, the impact of these institutions

on corporate financial and national economic policy, access to foreign capital markets and external financing of Canadian economic development. (Also listed as Economics 43.410★.)

Prerequisite: Economics 43.202★, 43.203★, 43.212★, 43.213★, 43.220 or Mathematics 69.267★ (grade of C- or better in each of these courses).

Day division, Fall and Winter terms: Lectures and seminars three hours a week.

#### ■ Topics in Management Studies (42.460★-42.464★)

##### Business 42.460★

##### **Topics in Management Studies**

Consideration of selected topics in accounting, finance, human resources, information systems, international business, marketing, operations management, etc.

Prerequisite: Permission of the School.

During the 1986-87 academic year, the School of Business expects to offer the following special-topics courses:

##### Business 42.462★

##### **Marketing Analysis**

This course examines analytical techniques for marketing and/or marketing research data. Topics covered may include Luce Choice Axiom, Learning Models of Consumer Behaviour, Models of Change and Response Uncertainty, Qualitative Analysis Techniques, Quantal Choice Models, and other procedures appropriate for the analysis of panel data, diary data, survey data, and other marketing research data.

Prerequisite: Business 42.327★ or 70.452★.

##### Business 42.463★

##### **International and Comparative Management**

This course focuses on the problems of managing large organizations whose operations span national boundaries, including both domestic firms with international markets and multinational corporations. Special attention is given to the difficulties of maintaining lines of communication and control between elements separated by long distances and located in disparate cultural settings. The structural, legal, staffing and operational implications of maintaining a successful international operation are also discussed. Throughout the course, comparisons are drawn between domestic and international systems of management in various countries including Canada, the United States, France, Great Britain and Japan.

Prerequisite: Business 42.311★, or permission of the School.

##### Business 42.464★

##### **Men and Women in Management**

This course examines male and female participation in management as a cultural phenomena, a psychological experience, a discrimination issue, a resource allocation decision and as a self-definition process related to left-brain, right-brain functioning. Skills developed and conclusions drawn are related to managerial decision making and personal career development and secondarily to social policy.

Prerequisite: Business 42.311★.

##### Business 42.465

##### **Directed Studies**

This course is intended to provide students with the opportunity of carrying out a major research project under the supervision of a faculty member.

Prerequisite: Permission of the School.

##### Business 42.469★

##### **Business Policy Seminar**

This course focuses upon the management process in business. It examines the functions and responsibilities of managers in the areas of strategy formulation and implementation. It is designed to integrate previous work in the functional disciplines of business administration by developing an overall analytical viewpoint.

Prerequisite: Fourth-year Honours Business standing.

Day division, Fall and Winter terms: Two hours a week.

#### **Courses Planned for Summer School and Evening Division**

##### *Summer School*

The following courses are offered each summer:

Business 42.101★, 42.102★, 42.140★, 42.250★ and 42.308★.

##### *Evening Division*

Core courses in the School of Business are available each year in the Evening division. Offerings of additional courses are subject to the availability of instructors.



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**Program Committee**


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*Program Co-ordinator*  
To be announced

**Members**

M. Davies (*Law*)  
A. Gagnon (*Political Science*)  
P. Harcourt (*Film Studies*)  
S. MacKenzie (*Geography*)  
L. McDonald (*English*)  
D. Muise (*History*)  
D. Smith (*French*)  
D. Stasiulis (*Sociology*)  
R.T. Clippingdale, *Director, Institute of Canadian Studies*

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**General Information**

The undergraduate program in Canadian Studies aims to provide students with a broad, multidisciplinary view of Canada while at the same time allowing them to combine their study with disciplinary training in other Arts and Social Science departments if they so desire. Canadian Studies offers Major, Combined Major and Combined Honours programs.

The program forms the undergraduate division of the Institute of Canadian Studies, and, like the graduate division of the Institute, benefits from Carleton University's situation in Canada's capital and the richness of material available in Ottawa for such studies.

The program core is designed to accomplish two things. The first is to give the student a broad understanding of Canadian history, culture and society, and the opportunity to study the relationships among various aspects of Canada in some depth. The second is to give the student some competence in French and to encourage further study of the language.

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**Graduation Regulations**

In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all Committee regulations and requirements as set out below.

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**Major and Honours Programs****Core Courses**

The Major, Combined Major and Combined Honours programs in Canadian Studies require a core of the following five credits:

Canadian Studies 12.188 Contemporary English-Canadian and French-Canadian Literature;

French 20.108 Advanced French for Non-Majors or French 20.111 Advanced French (A);

Two of the following four courses, to be chosen in consultation with the Program Co-ordinator:

History 24.230, Canada from 1763;  
Philosophy 32.202, Ideas of the Individual and Society in Canada;

Political Science 47.200, Canadian Government and Politics;

Sociology-Anthropology 56.220, Canadian Society.

Canadian Studies 12.302, Canadian Studies Seminar.

A grade-point average of at least 4.0 must be achieved in the required credits of the program core. Prerequisites in these courses are waived for Canadian Studies students, except in Economics 43.325. At least two credits towards the degree must be beyond the 200 level.

**1. Major Program**

In addition to the five core credits, the Canadian Studies Major student must take the following five credits:

One Arts credit from the following list:

Art History 11.202★, Canadian Art: Origins to Present, and 11.300★, Canadian Painting and Sculpture or 11.301★, Contemporary Canadian Art;  
English 18.282, Canadian Literature;  
French 20.267★, La littérature du XIXe siècle au Canada français and 20.268★, La littérature du XXe siècle au Canada français;  
History 24.230, Canada from 1763;  
Philosophy 32.202, Ideas of the Individual and Society in Canada.

One Social Science credit from the following list:

Economics 43.325, The Economic Development of Canada, (prerequisite of Economics 43.100 required for Canadian Studies students);  
Geography 45.305★, Canada: A Geographic System and 45.306★, Canada: A Regional Mosaic;  
Political Science 47.200, Canadian Government and Politics;  
Sociology-Anthropology 56.220, Canadian Society;

Three program credits (courses with substantial Canadian content), approved as such by the Co-ordinator. At least two credits in program options must be beyond the 100 level.

**2. Combined Major Program**

In addition to the five core credits, the Canadian Studies Combined Major student must take *one* credit from the following list:

Art History 11.202★, Canadian Art: Origins to Present, and 11.300★, Canadian Painting and Sculpture or 11.301★, Contemporary Canadian Art;  
Economics 43.325, The Economic Development of Canada, (prerequisite of Economics 43.100 required for Canadian Studies students);  
English 18.282, Canadian Literature;  
French 20.267★, La littérature du XIXe siècle au Canada français and 20.268★, La littérature du XXe siècle au Canada français;  
Geography 45.305★, Canada, a Geographic System and 45.306★, Canada, a Regional Mosaic;  
History 24.230, Canada from 1763;  
Philosophy 32.202, Ideas of the Individual and Society in Canada;  
Political Science 47.200, Canadian Government and Politics;  
Sociology-Anthropology 56.220, Canadian Society;

Students who wish to use one of the courses required by Canadian Studies to fulfil a requirement of their second Major may negotiate a substitute course with the Canadian Studies Co-ordinator.

Students whose other Major is in the Faculty of Arts must take one Social Science course within the Canadian Studies core.

### 3. Combined Honours Program

In addition to the five core credits, the Canadian Studies Combined Honours program requires the following three credits:

One Arts credit *and* one Social Science credit with substantial Canadian content, *one* of which must be at the 400 level;

Canadian Studies 12.402, Canadian Studies seminar.

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#### Courses Offered

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Canadian Studies 12.188

#### Contemporary English-Canadian and French-Canadian Literature

This course, which is offered by faculty members from the English and French departments, provides a general introduction to and comparison of the two major literatures of Canada. Lectures are given in both English and French. (Also listed as English 18.188 and French 20.188.) Prerequisite: A basic reading knowledge of French.

Day division: Three hours a week.

*E. Paldosky, D. Smith*

Canadian Studies 12.302

#### Canadian Studies Seminar

This course is designed to allow the student to bring together the knowledge acquired in the various disciplines of the program. Each year a different topic or topics are explored in an interdisciplinary perspective. In 1986-87 the theme is "The White Man's Indian: Perceptions of Canada's Native Peoples."

Prerequisite: Third-year standing in Canadian Studies or permission of the Committee.

Day division: Seminar three hours a week.

*P. Duchemin*

Canadian Studies 12.402

#### Canadian Studies Seminar

This course is designed to allow the Honours student to engage in research and class discussion on topics of an interdisciplinary nature. In 1986-87 the theme is "Technology and the Canadian mind."

Evening division: Seminar three hours a week.

*N. Ball*

Canadian Studies 12.491★

#### Directed Studies I

An optional course restricted to Fourth-year Honours students in Canadian Studies and to students doing a Qualifying year in the graduate program of the Institute of Canadian Studies. It includes supervised reading and written work in a Canadian Studies area.

Prerequisite: Permission of the Institute.

Canadian Studies 12.492★

#### Directed Studies II

An optional course restricted to Fourth-year Honours students in Canadian Studies and to students doing a Qualifying year in the graduate program of the Institute of Canadian Studies. It includes supervised reading and written work in a Canadian Studies area.

Prerequisite: Permission of the Institute.

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#### Courses with Substantial Canadian Content Offered within the Arts and Social Sciences Faculties

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##### Art History

- 11.202★ Canadian Art: Origins to Present
- 11.300★ Canadian Painting and Sculpture
- 11.301★ Contemporary Canadian Art
- 11.302★ Canadian Architecture
- 11.314★ Inuit Art
- 11.315★ North American Indian Art
- 11.400★ Topics in Canadian Art
- 11.403★ Topics in Canadian Native Art

##### Economics

- 43.320★ Economics of Information and the Media
- 43.325 The Economic Development of Canada
- 43.331★ Social Economics
- 43.341★ Regional Economics
- 43.344★ Economic Thought and Policy in Canada
- 43.380★ Topics in Canadian Economic Policy

##### English Language and Literature

- 18.188 (Canadian Studies 12.188) Contemporary English-Canadian and French-Canadian Literature
- 18.282 Canadian Literature
- 18.381 Canadian Poetry
- 18.383 Canadian Fiction
- 18.387 Selected Topic in Canadian Literature
- 18.483 Studies in the Literature of Quebec and English Canada
- 18.486★ Studies in Canadian Literature I
- 18.487★ Studies in Canadian Literature II

##### Film Studies

- 19.328 The Canadian Cinema

##### French

- 20.163 Introduction to Literature: French-Canadian Texts from the End of the Nineteenth Century to the Present
- 20.188 (Canadian Studies 12.188) Contemporary English-Canadian and French-Canadian Literature
- 20.267★ La littérature du XIXe siècle au Canada français
- 20.268★ La littérature du XXe siècle au Canada français
- 20.332 Français canadien
- 20.381 Aspects de la littérature canadienne-française: Le roman québécois
- 20.468★ Aspects de la littérature canadienne-française I (Théâtre)
- 20.469★ Aspects de la littérature canadienne-française II (Poésie)

##### Geography

- 45.230★ The Cultural Landscape
- 45.305★ Canada: A Geographic System
- 45.306★ Canada: A Regional Mosaic
- 45.308 Geography of Soils
- 45.320★ The Canadian City: Internal Structure and Contemporary Problems
- 45.333★ Land Use, Regional Development and Planning in Canada
- 45.334★ Renewable Resource Planning in a Local Area
- 45.335 Historical Geography of Canada
- 45.351★ Northern Lands
- 45.370★ Population Geography
- 45.421★ Selected Themes in Urban Geography
- 45.442★ Transportation Geography
- 45.443★ Issues in Applied Economic Geography



*History*

- 24.230 Canada from 1763
- 24.231 Historical Introduction to Modern Canada
- 24.324★ Colonial Frontier Societies
- 24.326★ Canada Before and After the Conquest
- 24.329★ Canadian Urban History
- 24.330★ Social History of Canada
- 24.331★ French Canada Since Confederation
- 24.332★ The Atlantic Provinces
- 24.333★ Upper Canada and Ontario
- 24.334★ Canada-United States Relations
- 24.335★ Canadian Labour Movements since Confederation
- 24.336★ Canadian External Relations
- 24.337 The Emergence of the Political Tradition in Canada
- 24.338★ Canadian Immigration and Settlement
- 24.339★ History of Western Canada
- 24.340★ History of Canadian Socialism 1890-1976
- 24.350 Modern British and Canadian Constitutional History
- 24.430 The Formation of the British North American Societies, 1760-1848
- 24.431 The Making of the Nation, 1849-1896
- 24.432★ Acadian History, 1604-1967
- 24.437 The National Experience, Canada, 1896-1939
- 24.439 Modern Canada, 1939-1967

*Law*

- 51.100 Introduction to Legal Studies
- 51.203 Introduction Private Law Relationships
- 51.204 Law and Antisocial Behaviour
- 51.205 Introduction to Public Law
- 51.301★ Women and the Legal Process
- 51.303★ Contracts
- 51.345★ Labour Law
- 51.351★ Communications Law I
- 51.352★ Communications Law II
- 51.353 Civil Liberties and Human Rights
- 51.354★ Law and Native Peoples of Canada
- 51.380 Law of Environmental Quality
- 51.384 Law of the Family
- 51.440★ The Arbitration Process in Industrial Relations
- 51.445★ Labour Relations in the Public Service
- 51.450 Canadian Constitutional Law
- 51.456★ Administrative Law I
- 51.457★ Administrative Law II
- 51.491★ Tutorial in Law
- 51.492★ Tutorial in Law

*Music*

- 30.310 Music in Canada

*Political Science*

- 47.200 Canadian Government and Politics
- 47.300 Canadian Provincial Politics
- 47.301★ Canadian Provincial Government and Intergovernmental Relations
- 47.302★ Canadian Municipal Government
- 47.303★ Canadian Urban Politics
- 47.304★ Political Parties and Elections in Canada
- 47.305★ Ontario Government and Politics
- 47.335★ Canadian Political Ideas
- 47.336★ Canadian Political Culture
- 47.340 Canadian Public Administration
- 47.345★ Contemporary Public Policy Analysis
- 47.366★ Canadian Foreign Policy
- 47.400 Topics in Canadian Government and Politics
- 47.401 Canadian Public Policy
- 47.402★ Policy Seminar: Problems of Northern Development

- 47.403★ Politics and the Media
- 47.404★ Interest Groups in Canadian Politics
- 47.405 Federalism
- 47.406★ Legislative Process in Canada
- 47.407★ The Politics of Law Enforcement in Canada
- 47.408★ National Security and Intelligence in the Modern State
- 47.409★ Politics in Quebec
- 47.410★ Canadian and Comparative Local Government and Politics

*Sociology and Anthropology*

- 54.219★ North American Native Peoples
- 56.220 Canadian Society
- 56.241 Kinship, Marriage and the Family
- 53.247 Women in Society
- 53.252★ Sociology of Aging and the Elderly
- 53.256★ Police in Society
- 54.318★ The Prehistory of New World Native Peoples
- 56.320 French Canada and Quebec Society
- 53.373★ Criminal Justice Policy
- 53.377★ Sociology of Welfare Institutions
- 53.380 Social Policy
- 56.465★ Selected Problems in the Study of Ethnic and Race Relations
- 54.470★ Selected Problems in the Study of North American Native Peoples
- 56.478★ Anthropology of the Polar Basin

*School of Journalism* offers the following courses with substantial Canadian content:

*Journalism*

- 28.306★ Comparative Media Studies
- 28.351★ Communications Law I
- 28.352★ Communications Law II

*Mass Communication*

- 27.211 The Mass Media in Modern Society
- 27.411 Selected Problems in Mass-Communication Analysis

# Department of Classics

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## Officers of Instruction

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*Chairman*  
R.L. Jeffreys

*Professors*  
R.C. Blockley  
A. Trevor Hodge

*Associate Professors*  
D.G. Beer  
A.S. Fotiou  
R.L. Jeffreys  
T.R. Robinson  
M.E. Welsh

*Adjunct Professors*  
Peter Arnott  
C.M. Wells

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## General Information

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The discipline of Classics is divided into three main fields: Latin, Greek and Classical Civilization. By "Latin" and "Greek" are meant works of Latin and ancient Greek literature studied in the original tongue, not in translation; "Classical Civilization" covers all non-linguistic studies in classical antiquity, such as ancient history and literature in translation.

Honours and Majors programs exist in Latin alone and Greek alone, and in Classical Civilization alone. Combined Honours and Combined Major programs are available in a combination of any two of the three fields, i.e., Latin and Greek, Latin and Classical Civilization, Greek and Classical Civilization.

Combined Honours and Combined Majors programs can also be arranged combining any of the three with work in another department (for example, Religion and Classical Civilization; Latin and French) upon consultation with the department chairmen concerned.

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## Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all departmental regulations and requirements as set out below.

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## Major Programs

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### Major in Greek

Five Greek credits and Classical Civilization 13.290.

### Major in Latin

Five Latin credits and Classical Civilization 13.291.

### Major in Classical Civilization

Six Classical Civilization credits and Latin or Greek at the 115 level or equivalent.

Students must include in the program Classical Civilization 13.209 and either 13.290 or 13.291; the equivalent of one credit from Classical Civilization 13.321★, 13.322★,

and 13.323★; one from Classical Civilization 13.300, 13.312 and 13.328; and options in Classical Civilization equivalent to two credits.

## Combined Majors

### *Greek and Classical Civilization*

Four Greek credits and four Classical Civilization credits to include 13.209 and 13.290.

### *Latin and Classical Civilization*

Four Latin credits and four Classical Civilization credits to include 13.209 and 13.291.

### *Greek and Latin*

Four Greek credits and four Latin credits and either Classical Civilization 13.290 or 13.291.

## Combined Majors with Another Department

Combined Majors can be arranged with other departments. In addition to the requirements of the other department (for which the student should consult its chairman), one of the following will be required:

### *Greek*

Four Greek credits and Classical Civilization 13.290.

### *Latin*

Four Latin credits and Classical Civilization 13.291.

### *Classical Civilization*

Five Classical Civilization credits.

Students must include in the program Classical Civilization 13.209, 13.290, 13.291 and at least one credit at the 300 level.

All courses are to be chosen in consultation with the Department.

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## Honours Programs

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### Honours in Greek

Seven Greek credits and Classical Civilization 13.209 and 13.290.

### Honours in Latin

Seven Latin credits and Classical Civilization 13.209 and 13.291.

### Honours in Classical Civilization

Nine Classical Civilization credits and Greek 15.151 or Latin 16.151 and the other language at the 115 level.

Classical Civilization courses must include 13.209, either 13.290 or 13.291, either 13.300 or 13.312 or 13.328, two of 13.321★, 13.322★ and 13.323★, and 13.427 or 13.428 or 13.429; Classical Civilization options equivalent to four credits.

## Combined Honours

### *Greek and Classical Civilization*

Six Greek credits, five Classical Civilization credits to include 13.209 and 13.290, and Latin 16.115 or 16.151.

### *Latin and Classical Civilization*

Six Latin credits, five Classical Civilization credits to include 13.209 and 13.291 and Greek 15.115 or 15.151.

### *Greek and Latin*

A minimum of 12 credits out of 20 is required. These may be built up in various combinations to produce differing degrees of emphasis on the two languages. Acceptable



combinations are:

Six Greek credits and six Latin credits;

Seven Greek credits and five Latin credits;

Five Greek credits and seven Latin credits;

Five Greek credits, five Latin credits and two Classical Civilization credits.

### Combined Honours with Another Department

Combined Honours can be arranged with other departments. In addition to the requirements of the other department (for which the student should consult its chairman), one of the following will normally be required:

*Greek*

Six Greek credits and Classical Civilization 13.290.

*Latin*

Six Latin credits and Classical Civilization 13.291.

*Classical Civilization*

Six Classical Civilization credits to include 13.209, 13.290 or 13.291 and 13.427 or 13.428 or 13.429, and Latin 16.115 or Greek 15.115.

*Note:*

In all of the above prescriptions, Major and Honours, unless stated otherwise, the terms "Greek courses" and "Latin courses" should be understood to refer to courses at the 151 level and higher. Students with no previous knowledge of the language will need to take in addition Greek 15.115 or Latin 16.115 as a prerequisite for admission to the 151 level and this course will normally count toward their degree as one of their options. Greek 15.116 may not be taken to complete the Department's requirements for any degree. It may be taken only as an option.

### Chemistry of Art and Artifacts

The attention of students interested in archaeology is directed to Chemistry 65.107, The Chemistry of Art and Artifacts. The course, designed for archaeologists and historians dealing with the deterioration and preservation of artifacts and works of art, is strongly recommended by the Department as an option.

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### Graduate Program

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The Department of Classics offers studies leading to the degree of Master of Arts. For further details consult the Graduate Studies and Research Calendar.

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### Courses Offered

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#### ■ Greek

Greek 15.115

#### Beginning Classical Greek

A beginning course to introduce students not only to grammar and syntax, but also to the reading of continuous prose.

Day division: Lectures and practice periods four hours a week.

Greek 15.116

#### Beginning Modern Greek

Not offered 1986-87.

Greek 15.151

#### First Year Greek: Reading and Prose Composition

A study of the *Alcestis* of Euripides and the *Oration*s of

Lysias. Some time is also devoted to prose composition.

Prerequisite: Greek 15.115 or equivalent.

Day division: Lectures three hours a week.

Greek 15.212★

#### The Orators I

Introductory readings in the Greek orators.

Prerequisite: Greek 15.151 or permission of the Department.

Day division, Fall term: Tutorial three hours a week.

Greek 15.215★

#### Epic I

Introductory readings in Greek epic.

Prerequisites: Greek 15.151 or permission of the Department.

Day division, Winter term: Tutorial three hours a week.

Other courses to be offered in rotation in coming years are:

Greek 15.211★

#### The Tragedians I

Greek 15.213★

#### Comedy I

Greek 15.214★

#### Lyric and Elegy I

Greek 15.216★

#### The Historians I

Greek 15.217★

#### The Philosophers I

Greek 15.311★

#### The Tragedians II

Greek 15.312★

#### The Orators II

Greek 15.313

#### Comedy II

Greek 15.314★

#### Lyric and Elegy II

Greek 15.315★

#### Epic II

Greek 15.316★

#### The Historians II

Greek 15.317★

#### The Philosophers II

Greek 15.411★

#### The Tragedians III

Greek 15.412★

#### The Orators III

Greek 15.413★

#### Comedy III

Greek 15.415★

#### Epic III

Greek 15.416★

#### The Historians III

Greek 15.417★  
**The Philosophers III**

Greek 15.490★  
**Directed Study (Poetry)**

Greek 15.491  
**Directed Study (Prose)**

■ **Latin**

Latin 16.115  
**Beginning Latin**

A course for students with no previous knowledge of Latin and designed to introduce them not only to the grammar and syntax of the language but also to the reading of continuous prose.

Day division: Lectures and practice periods four hours a week.

Latin 16.151  
**First Year Latin: Reading and Prose Composition**  
Selected readings from authors particularly valuable for the light they throw on Roman society, especially in the Silver Age. Time is also devoted to prose composition.  
Prerequisite: Grade 12 Latin, Latin 16.115 or equivalent.  
Day division: Lectures three hours a week.

Latin 16.213★  
**The Historians I**  
Introductory readings in the Roman historians.  
Prerequisite: Latin 16.151 or permission of the Department.  
Day division, Fall term: Tutorial three hours a week.

Latin 16.218★  
**Virgil and Epic I**  
Introductory readings in Virgil.  
Prerequisite: Latin 16.151 or permission of the Department.  
Day division, Winter term: Tutorial three hours a week.

Latin 16.313★  
**The Historians II**  
Intermediate readings in the Roman historians.  
Prerequisite: The equivalent of one full credit in Latin at the 200 level.  
Day division, Fall term: Tutorial three hours a week.

Latin 16.318★  
**Virgil and Epic II**  
Intermediate readings in Virgil.  
Prerequisite: The equivalent of one full credit in Latin at the 200 level.  
Day division, Winter term: Tutorial three hours a week.

Latin 16.413★  
**The Historians III**  
Advanced readings in the Roman historians.  
Prerequisite: The equivalent of one full credit in Latin at the 300 level.  
Day division, Fall term: Tutorial three hours a week.

Latin 16.418★  
**Virgil and Epic III**  
Prerequisite: The equivalent of one full credit in Latin at the 300 level.  
Day division, Winter term: Tutorial three hours a week.

Other courses to be offered in rotation in coming years:

Latin 16.211★  
**Lyric and Elegy I**

Latin 16.212★  
**Drama I**

Latin 16.214★  
**The Orators I**

Latin 16.215★  
**The Philosophers I**

Latin 16.216★  
**Satire I**

Latin 16.217★  
**Letters I**

Latin 16.311★  
**Lyric and Elegy II**

Latin 16.312★  
**Drama II**

Latin 16.314★  
**The Orators II**

Latin 16.315★  
**The Philosophers II**

Latin 16.316★  
**Satire II**

Latin 16.317★  
**Letters II**

Latin 16.411★  
**Lyric and Elegy III**

Latin 16.412★  
**Drama III**

Latin 16.414★  
**The Orators III**

Latin 16.415★  
**The Philosophers III**

Latin 16.416★  
**Satire III**

Latin 16.417★  
**Letters III**

Latin 16.490★  
**Directed Study (Poetry)**

Latin 16.491  
**Directed Study (Prose)**

■ **Classical Civilization**

Classical Civilization 13.100  
**Some Aspects of Greek and Roman Civilization**  
Not offered 1986-87.

Classical Civilization 13.102★  
**Aspects of Greek Civilization**  
An introduction to Greek antiquity in which the main



characteristics of classical Greece are discussed. It is especially recommended for students of other faculties who desire an Arts option, or for Arts students whose interest is general rather than specific. There are appropriate readings from Greek authors in translation.

Day and Evening divisions, Fall term: Lectures two hours a week.

#### Classical Civilization 13.103★

##### **Aspects of Roman Civilization**

An introduction to ancient Rome in which the main characteristics of Roman civilization are discussed. It is especially recommended for students of other faculties who desire an Arts option, or for Arts students whose interest is general rather than specific. There are appropriate readings from Latin authors in translation.

Day and Evening divisions, Winter term: Lectures two hours a week.

#### Classical Civilization 13.119

##### **History of the Ancient World**

An introduction to the history of ancient Europe and the Near East, with a concentration upon the characteristic political, military and social institutions. Although emphasis is placed upon Greece and Rome, attention is also given both to earlier civilizations and to other contemporary ones.

Day division: Lectures two hours a week.

##### **Note:**

Only one credit may be earned from Classics 13.100, 13.102★ and 13.103★ and 13.119.

#### Classical Civilization 13.209

##### **Greek and Roman Literary Genres**

A study through English translation of the various genres of Greek and Latin literature, especially those which influenced later European writings: epic, drama, the ode, pastoral poetry, satire. (Also listed as English 18.209.)

Day division: Lectures two hours a week.

#### Classical Civilization 13.231

##### **Methods and Techniques of Archaeology**

The interrelation of archaeology and anthropology, history, classics, art history, etc. Techniques of field archaeology such as stratigraphy, air photography, surveying, Carbon 14, typology and seriation, underwater archaeology, laboratory analysis: and the organization and administration of a major excavation.

Evening division: Lectures two hours a week.

#### Classical Civilization 13.232★

##### **Greek and Roman Art and Archaeology**

The art, architecture and archaeology of Greece and Rome. Vase painting, sculpture, Greek and Roman architecture, town planning and analogous arts are studied. (Also listed as Art History 11.210★.)

Day division, Winter term: Lectures two hours a week.

#### Classical Civilization 13.235

##### **Ancient Science and Technology**

The development of science and technology in the ancient world and their practical application in such fields as ancient engineering, machinery, metallurgy, transport, building, agriculture and Hippocratic medicine: the position of the craftsman and artisan in society, the attitude of the intellectuals to science and manual labour, and the effect upon technological development of the institution of slavery. This course is suitable for students with no previous knowledge of Greece or Rome.

Day division: Lectures two hours a week.

#### Classical Civilization 13.240

##### **Greek Philosophy**

Offered in the Department of Philosophy as Philosophy 32.205.

Day division: Lectures and discussion three hours a week.

#### Classical Civilization 13.290

##### **History of Ancient Greece**

The history of classical Greece to the conquest of Asia by Alexander with special attention to the development of her characteristic institutions. (Also listed as History 24.290.)

Evening division: Lectures two hours a week.

#### Classical Civilization 13.291

##### **History of Ancient Rome**

The history of ancient Rome, her organization and expansion especially during the late Republic and early Empire. (Also listed as History 24.291.)

Day division: Lectures two hours a week.

#### Classical Civilization 13.300

##### **Classical Mythology**

A study of classical mythology, emphasizing its use in Greek and Roman literature and its place in classical art and religion. There is some discussion of classical myths in terms of contemporary interpretations of myth. (All texts used will be in English.)

Day division: Lectures two hours a week.

#### Classical Civilization 13.305

##### **Sites and Civilization**

(Summer only.)

#### Classical Civilization 13.312

##### **Greek and Roman Drama**

A study in translation of Greek and Roman tragedy and comedy; the origins, character and development of the ancient theatre. Plays by the following authors are discussed: Aeschylus; Sophocles; Euripides; Aristophanes; Menander; Plautus; Terence; Seneca.

Day division: Lectures and discussions two hours a week.

#### Classical Civilization 13.321★

##### **Studies in Greek History and Institutions**

A study of one of the major periods of ancient Greek history: e.g. the Archaic Age; Fifth Century Athens; Alexander and the Hellenistic monarchy. Special attention is given to the political, military and social institutions. Special topic for 1986-87: Early Byzantine Era. (Also listed as History 24.309★.)

Prerequisite: A course in ancient history or permission of the Department.

Day division, Fall term: Lectures two hours a week.

#### Classical Civilization 13.322★

##### **Studies in Roman History and Institutions**

A study of one of the major periods or themes of the history of ancient Rome: e.g. the Roman Revolution; the military history of Rome; the Early Roman Empire; the end of the ancient world. Special attention is given, where appropriate, to the political, social and economic institutions. Special topic for 1986-87: Provinces under Roman Empire. (Also listed as History 24.311★.)

Prerequisite: A course in ancient history or permission of the Department.

Day division: Winter term: Lectures two hours a week.

Classical Civilization 13.323★

**Studies in Ancient History and Institutions**

(Also listed as History 24.314★.)

Not offered 1986-87.

Classical Civilization 13.328

**Greek and Roman Literature and Thought**

Not offered 1986-87.

Classical Civilization 13.331★

**Pre-Classical Greek Art and Archaeology**

The art, architecture and archaeology of the Minoan, Mycenaean and Cycladic civilizations. With emphasis on vase painting, architecture, small finds and frescoes, the course documents the development of art in the Aegean area down to the emergence of Greece into the historical era around 600 B.C. (Also listed as Art History 11.304★.)  
Day division, Fall term: Lectures two hours a week.

Classical Civilization 13.334★

**Etruscan and Roman Art**

Offered in the Department of Art History as Art History 11.310★.

Not offered 1986-87.

Classical Civilization 13.427

**Selected Topic in Classical History and Literature**

Not offered 1986-87.

Classical Civilization 13.428

**Selected Topics in Greek and Roman Literature**

This course is intended for students who are in their Third or Fourth years. Special topic for 1986-87: Drama.  
Prerequisite: Permission of the Department.  
Day division: Seminar two hours a week.

Classical Civilization 13.429

**Selected Topics in Greek and Roman History**

Intended for Honours students in history and classics who should normally be in the Third or Fourth years.  
Special topic for 1986-87: The Late Roman Empire. (Also listed as History 24.429.)  
Prerequisite: Permission of the Department.  
Evening division: Seminar two hours a week.



## Members of the Committee

### Chairman

A.T. Tolley (*English and Comparative Literature*)

### Assistant Chairman

F.G. Loriggio (*Italian and Comparative Literature*)

### Members

D.A. Beecher (*English*)

M. Ciavolella (*Italian*)

J.B. Dallett (*German*)

F. de Toro (*Comparative Literature*)

A. Elbaz (*French*)

D.P. Forcese, *Dean of the Faculty of Social Sciences, ex officio*

N.E.S. Griffiths, *Dean of the Faculty of Arts, ex officio*

A.W. Halsall (*French*)

J.J. Healy (*English*)

B.W. Jones (*English*)

P. Laurette (*French*)

C.A. Marsden (*Spanish*)

R.M. Polzin (*Religion*)

H.-G. Ruprecht (*Linguistics and Comparative Literature*)

E.Z.S. Sarkany (*French*)

E. Voldeng (*French*)

S.F. Wise, *Dean of the Faculty of Graduate Studies and Research, ex officio*

G.A. Woods (*Comparative Literature*)

## General Information

The focus of the Comparative Literature program is the study of literature in its international context and the comparison of literary phenomena usually studied in isolation because of linguistic barriers and the traditional departmental division of academic disciplines. Taking into account the interrelation of all humanistic studies such as the various literatures, philosophy, psychology, sociology, the visual arts and history, "comparatists" view literary creation within the total complex evolution of world literature. The historical flow of literary archetypes, the role of folklore and myth in literature, recurrent problems of literary theory, and consideration of the less well known literatures of the world, are some of the objects of comparative literature studies.

Although there is no undergraduate degree program in Comparative Literature at Carleton, students of other subjects may find it illuminating to take courses in comparative literature as an enhancement of their degree programs. They may also submit a coherent pattern of courses in comparative literary studies for a B.A. Major or Honours (Directed Interdisciplinary Studies), in accordance with the procedures described for this degree in the Calendar, p. 122.

In their choice of courses students must *first* be guided by the requirements of the degree program of their choice. However, those intending to proceed to the M.A. in Comparative Literature will need to acquire a competence in more than one language other than English and a familiarity with more than one national literature.

Assistance in planning a pattern of courses is available to interested students from members of the Comparative Literature Committee. However, the following courses from departments in the Faculty of Arts would be particularly appropriate for consideration by those who intend

to emphasize comparative literary studies in the courses they take for their B.A.

## First Year

### Art History

11.110★ Western Art: Prehistory to Medieval

11.111★ Western Art: Renaissance to the Present

11.115★ Art as Visual Communication

### Classics

13.102★ Aspects of Greek Civilization

13.103★ Aspects of Roman Civilization

### English Language and Literature

18.101 English and Continental Texts

18.162 Twentieth-Century Literature

18.188 Contemporary English-Canadian and French-Canadian Literature

### French

20.188 Contemporary English-Canadian and French-Canadian Literature

### Film Studies

19.100 Introduction to Film Studies

### Linguistics

29.100 Introduction to Linguistics

### Music

30.100 Introduction to Music

### Religion

34.102★ Introduction to the Literature of the Hebrew Bible (Old Testament)

## Second Year

### Art History

11.203★ Arts of Native Peoples: The Americas

11.204★ Arts of Native Peoples: Africa and Oceania

### Classics

13.209 Greek and Roman Literary Genres

### English Language and Literature

18.206 Children's Literature

18.208 Myth and Symbol

18.290★ Literature of the Self

18.296 The Writer, Literature and Society

### Film Studies

19.268 Forms and Conventions of the Cinema

### Linguistics

29.232★ Semantics

29.271★ Sociolinguistics

29.280 Language and Communication

### Russian

36.260 Russian Literature in English Translation — Nineteenth and Twentieth Centuries

36.290 Twentieth-Century East-European Literature in English Translation

## Third Year

### Art History

11.314★ Inuit Art

*Classics*

13.300 Classical Mythology

*English Language and Literature*

18.300 Literary Criticism from Aristotle to the Present  
18.390 The Literature of Existentialism  
18.394★ Theatre and Society

*Film Studies*

19.315 Questions of Documentary Practice  
19.333 Film and Society  
19.350 Film Theory

*Italian*

26.341 Tutorial: Studies in Literary Genres

*Music*

30.355 Stylistic and Structural Analysis

**Fourth Year**

*Art History*

11.431 Topics in Iconography

*English Language and Literature*

18.400 Studies in Literary Theory and Criticism  
18.483 Studies in the Literature of Quebec and English Canada  
18.496★ Studies in African or Caribbean Literature  
18.497★ Studies in Australian and New Zealand Literature or Indian Literature in English

*German*

22.483★ Language and Society in Twentieth-Century Germany

Attention is also drawn to the value of taking courses that parallel one another in more than one literature, such as English 18.322, Chaucer and the Literature of Medieval England, French 20.251, La littérature du Moyen Age, and German 22.430, Medieval Language and Literature. Students thinking of proceeding to the M.A. in Comparative Literature may wish to consult the Graduate Calendar, which contains recommended course patterns.

Students registered in other language departments who wish to enrol in one or more courses in the Comparative Literature program must demonstrate a reading knowledge of the languages required for each course. Such students are encouraged to emphasize their own area of literary study in presentations and essays when the instructor judges that the content of the courses(s) so permits.

Interested students are invited to contact the Chairman in Room 1726, Arts Tower.

The Comparative Literature Committee offers a program of graduate study leading to the degree of Master of Arts. The Committee makes available some of its courses as options for qualified undergraduates and graduates who are registered in other disciplines and are appreciative of the broader perspectives offered by comparative literature.

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**Courses Offered**

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Comparative Literature 17.301

**The Dynamics of Literary Production and Response**

A course designed to introduce students to methods of analysis in literary studies by examining interaction

among author, text and public in different cultural settings. Theoretical points of view, including sociocultural, historical, aesthetic and stylistic, are contrasted by reconstructing a specific situation of literary production and reception. Appropriate for students seeking an introduction to contemporary critical methodologies.

A reading knowledge of a modern language other than English is recommended.

Prerequisite: Permission of the Committee.

Day division: Three hours a week.

H.-G. Ruprecht

Comparative Literature 17.361

**Studies in Literary Genres**

Not offered 1986-87.

Comparative Literature 17.401★

**Foundations of Comparative Literature**

The history of the discipline of comparative literature is studied, including its beginning in nineteenth-century France, its evolution, and its current status in Europe, the United States and Canada.

Prerequisite: Permission of the Committee.

Evening division, Fall term: Three hours a week.

G.A. Woods

Comparative Literature 17.402★

**Theories of Literature**

The course focuses on twentieth-century literary theories in the context of comparative studies, providing the student with an over-all view of the theoretical discussion of literature from about 1920 to the present. Included in the study are Russian Formalism, American New Criticism, and such other approaches as the structuralist, semiotic, socio-cultural and hermeneutic.

Prerequisite: Permission of the Committee. Students enrolling in this course under the cross-listed number Spanish 38.402★ should note the requirements of the Department of Spanish.

Evening division, Winter term: Three hours a week.

G.A. Woods

Comparative Literature 17.403

**Selected Topic in Comparative Literature**

Studies of a selected topic are available on a tutorial basis, subject to agreement between students and instructors.

Prerequisite: Permission of the Committee.



Program Co-ordinator  
K. Hatt (Sociology)

Office  
S. Rochon (B746 Loeb Building)

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## General Information

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The concentration in Criminology and Criminal Justice provides students with the opportunity for focused study relating to crime and criminal justice. It allows students to take courses in the area while completing a Major or Honours in the disciplines of Sociology-Anthropology, Psychology or Law. These courses enable the student to be exposed to the variety of topics and approaches one needs in order to master this broad field. When students choose to concentrate in this area, two sets of courses are required:

1. Concentration Requirements
2. Disciplinary Requirements

The first set includes those required courses that deal with Criminology and Criminal Justice. The second set refers to those courses required to complete the particular Major or Honours chosen (i.e., Law, Sociology-Anthropology or Psychology, or a Combined Major or Combined Honours in any two of Sociology-Anthropology, Psychology and Law).

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## Admission to the Concentration

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This is a limited enrolment concentration.

Beginning in 1985-86, students will be considered for admission to the concentration only as they prepare to enter Third year, i.e., after they have completed at least eight credits. (Students who have already been admitted to the concentration, and who are eligible to continue, will be permitted to complete their program of study.)

Admission will be based on the grade-point average achieved in *specific courses*. These courses are: Psychology 49.100; Law 51.100; one of Sociology 53.100, Anthropology 54.100 or Sociology-Anthropology 56.100; Law 51.204; and Sociology 53.270. The grade-point average will be based on *as many of these five courses as have been completed*. In order to be considered for admission, at least *three* of the five courses listed above must have been completed. A floating minimum grade-point average will be used to determine admission to the concentration. That is, the students with the highest grade-point average in the courses referred to above will be admitted to the concentration.

Carleton students applying for the concentration must do so through their Registrar's Office *no later than May 1* to be considered for a space in the concentration. Students from other institutions should consult the admissions section of this Calendar for deadlines and procedures.

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## Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all departmental regulations and requirements as set out below.

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## Concentration Requirements

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1. Psychology 49.100; Law 51.100; one of Sociology 53.100, Anthropology 54.100, or Sociology-Anthropology 56.100. (The grades on these courses will not be included in the calculation of the averages for continuation in, or graduation with, the concentration.)
2. Sociology 53.270 (Criminology)
3. Law 51.204 (Law and Antisocial Behaviour)
4. Psychology 49.342★ (Criminal Behaviour)
5. Sociology 53.373★ (Criminal Justice Policy) or 53.388★ (Current Issues in Criminal Justice)
6. Sociology 53.386★ (Field Placement) or Psychology 49.393★ or 49.394★ (Practicum) or Law 51.395★ (Practicum)

Students must maintain a *minimum* average of C- (4.0) in requirements 2 to 5 listed above, in order to remain in, and graduate with, the concentration in Criminology and Criminal Justice.

The Field Placement or Practicum is graded "satisfactory" or "unsatisfactory." To obtain credit for this course, a student must achieve the grade of "satisfactory."

It should be noted that either Psychology 49.210★ or 49.260★ is a prerequisite for Psychology 49.342★, and that Sociology 53.255★ or 53.270 is a prerequisite for Sociology 53.373★.

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## Disciplinary Requirements

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### Major Degree

In addition to the concentration requirements, students must also complete compulsory disciplinary requirements. These are found on the chart that follows.

Students in the Criminology and Criminal Justice concentration must select a Major from one of the six combinations given below:

1. Major in Law
2. Major in Sociology-Anthropology
3. Major in Psychology
4. Combined Major in Sociology-Anthropology and Psychology
5. Combined Major in Sociology-Anthropology and Law
6. Combined Major in Psychology and Law

### Honours Degree

Students interested in an Honours degree in Law, Sociology or Psychology, or a Combined Honours degree in two of Law, Psychology or Sociology, with the concentration in Criminology and Criminal Justice must:

1. fulfil the disciplinary requirements for the Honours degree;
2. fulfil the concentration requirements in Criminology and Criminal Justice; and
3. in fulfilling the disciplinary requirements for the Honours degree, complete a thesis pertaining to the legal, psychological or sociological analysis of crime or criminal justice.

For further information consult the program co-ordinator and the Honours adviser in the relevant discipline.

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**Recommended Options**

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There are a number of courses relevant to the area of Criminology and Criminal Justice, which students may consider as options. Such courses are:

Sociology 53.255★, Sociology of Deviance

Sociology 53.256★, Police in Society

Psychology 49.343★, Addiction.

Psychology 49.364★, Abnormal Psychology

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**Field Placement (or Practicum)**

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Students may complete either Sociology 53.386★ or Psychology 49.393★ or 49.394★ or Law 51.395★ as part of their concentration requirements. The courses are open only to Third-year students admitted to the concentration. In order to provide a satisfactory placement, students must register with the co-ordinator in the spring prior to entering Third year.



### Disciplinary Requirements for Major Degree

#### Requirements for a Major in Sociology-Anthropology

1. One chosen from 53.100, 54.100, 56.100;
2. 56.200★;
3. One chosen from 53.201★, 54.201★;
4. One chosen from 56.305, 53.306, 54.310;
5. One additional credit in Sociology and/or Anthropology at the 300 level (53.373★ or 53.388★, and 53.386★);
6. Two additional credits in Sociology and/or Anthropology (53.270).

#### Requirements for a Major in Law

1. Law 51.100;
2. Two of Law 51.203, 51.204 or 51.205 (51.204);
3. At least three additional Law credits (51.395★).

#### Requirements for a Major in Psychology

1. 49.100;
2. 49.200;
3. Four of 49.210★, 49.220★, 49.230★, 49.250★, 49.260★, and 49.270★; to include at least one of 49.220★ or 49.270★;
4. Two additional credits in Psychology (including 49.342★ and 49.393★ or 49.394★);
5. Two credits outside the Faculty of Social Sciences. (These must each be from a different department or interdisciplinary area.)

### Requirements for Combined Major in Sociology-Anthropology/Law Sociology-Anthropology/Psychology and Psychology/Law

#### Sociology-Anthropology

1. One chosen from 53.100, 54.100, 56.100;
2. Either 56.200★ and 53.201★ (or 54.201★) or one chosen from 56.305, 53.306, 54.310;
3. One additional credit in Sociology and/or Anthropology at the 300 level (53.373★ or 53.388★, and 53.386★);
4. One further credit in Sociology and/or Anthropology (53.270).

#### Psychology

1. 49.100;
2. 49.200;
3. Four of 49.210★, 49.220★, 49.230★, 49.250★, 49.260★, and 49.270★; to include at least one of 49.220★ or 49.270★;
4. One additional credit in Psychology (49.342★ and 49.393★ or 49.394★);
5. Two credits outside the Faculty of Social Sciences. (These must each be from a different department or interdisciplinary area.)

#### Law

1. Law 51.100;
2. Two of Law 51.203, 51.204 or 51.205 (51.204);
3. At least two further Law credits (51.395★).

#### Notes:

1. Where concentration requirements also fulfil disciplinary requirements, the courses are listed in parentheses.
2. A student is required to take only one placement or practicum course.

# Directed Interdisciplinary Studies

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## Members of the Committee

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*Program Co-ordinator*  
M. Langer (*Film Studies*)

### *Members*

G. Carmody (*Biology*)  
M. Davies (*Law*)  
M. Fox (*Geography*)  
M. Glass (*Philosophy*)  
C. Gordon (*Sociology and Anthropology/Architecture*)  
K. McGillivray (*Assistant Registrar, Faculties of Art and Social Sciences, ex officio*)  
A. Riding (*Business*)  
J.H. Taylor (*History*)

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## General Information

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In Directed Interdisciplinary Studies, students concentrate on a theme or field of interest outside the formal programs offered by departments, schools or institutes. Students may choose courses from various disciplines bearing directly upon their interests. Some possibilities are medieval studies, Renaissance studies, Third World studies, African studies, Asian studies, comparative literary studies, studies in the fine arts, labour studies, urban studies, women's studies, technology, society and environment studies, or studies leading to a specific vocational goal not met by existing programs. Please refer to the Interdisciplinary section of the Calendar, pp. 393-408, for listings of courses and committees in some of these fields. Students in Directed Interdisciplinary Studies may take either a Major or an Honours program.

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## Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all Committee regulations and requirements as set out below.

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## Major Program

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1. Students applying for admission to the Major program must complete the prescribed application form, available from the office of the Arts and Social Sciences Faculty Registrar. They are required to list and justify a minimum of eight credits related to a significant theme or field of interest and fitting into a coherent pattern. On acceptance of the application, the credits noted above, or any variation later agreed to by the Committee, become a requirement for completion of the degree.
2. Prior to submitting a formal application, students are advised to consult with the Program Co-ordinator for assistance in working out a suitable pattern of courses.
3. To allow time for adequate appraisal by the Committee, the application for admission should be submitted as early as possible before the year of entry to the program (by July 1 for September registration).
4. Students may apply for admission to the program at any time before they begin their last five credits towards the degree.

5. Normally, three credits in the student's field of interest are to be included among the last five credits taken towards the degree.

6. In order to graduate, students must have a minimum overall grade-point average of 4.0 (C-) in all 15 credits counted towards the degree, as well as a minimum grade-point average of 4.0 (C-) in the eight-credit pattern approved for the degree.

7. Students must obtain at least one credit at the 300 level or above.

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## Honours Program

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1. Students applying for admission to the Honours program must complete the prescribed application form, available from the office of the Arts and Social Sciences Faculty Registrar. They are required to list and justify a minimum of 12 credits related to a significant theme or field of interest and fitting into a coherent pattern. On acceptance of the application, the credits noted, or any variation later agreed to by the Committee, become a requirement for completion of the degree.

2. At least six of the 20 credits must be in a single discipline.

3. At least four of the 12 credits should be taken at the 400 level or equivalent, one of these to be the Honours Essay, Interdisciplinary 04.498.

4. Regulations for the Major program numbered 2, 3, 4 and 5 apply equally to Honours.

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## Course Offered

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Interdisciplinary 04.498

### **Honours Essay**

A required interdisciplinary research essay for Honours students in the Fourth year of Directed Interdisciplinary Studies. The project is carried out by the student in consultation with a faculty supervisor. The project must be approved in advance by the Committee on Directed Interdisciplinary Studies; students must consult with the Program Co-ordinator in selecting a project and a supervisor. At least one week before the last day for course changes, students must submit to the Program Co-ordinator a written outline of the proposed study, approved by the supervisor. Arts and Social Sciences regulations governing Honours Theses and Research Essays apply to this project, which is equivalent to one credit. Registration in this course is limited to students in the Fourth year of the B.A. (D.I.S.) Honours program.



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## Officers of Instruction

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*Chairman*  
D.A. Smith

*Assistant Chairman*  
G.E. Clarke

*Supervisors of Graduate Studies*  
J.C. McManus, Ph.D. Studies  
J.I. Bernstein, M.A. Studies  
E.U. Choudhri, M.A. Studies

*Supervisor of Honours Studies*  
P.N. Rowe

*Supervisor of Major Studies*  
R.F. Neill

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R.A. Brecher  
H.E. English  
W.I. Gillespie  
K.A.J. Hay  
N.H. Lithwick (*Joint Appointment, School of Public Administration*)  
K. Marwah  
C.J. Maule  
D.G. McFetridge  
C.H. McMillan  
S.B. Park  
T.K. Rymes  
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R. Carson  
E.U. Choudhri  
G.E. Clarke  
E.G. Davis  
J.S. Ferris  
R. Geehan  
C.L. Johnson  
J.C. McManus  
R.F. Neill  
A.R.M. Ritter (*Joint appointment, School of International Affairs*)  
D. Smith

*Assistant Professors*  
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M. Demers  
R. Dimand  
Felice Martinello  
T.W. Ross  
P.N. Rowe  
L.L. Schembri

*Lecturer*  
C.M. Carmichael

*Director of Doctoral Studies, Joint Ph.D Program with the University of Ottawa*  
J.C. McManus

*Adjunct Professors*  
R. Bodkin  
N. Swan

*Departmental Administrator*  
Judy Poole

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## Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all departmental regulations and requirements as set out below.

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## Mathematics Requirements

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Students lacking Grade 13 Mathematics should take Mathematics 69.006★ and 69.007★, and these will count for credit, as options, in Economics Major and Honours programs.

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## Major Programs

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### Major in Economics

Students are normally permitted to major in Economics only if they have obtained a grade of at least C- in Economics 43.100. The requirement for a Major is Mathematics 69.109★ and 69.119★ and at least six credits in Economics: Economics 43.100, 43.202★, 43.203★, 43.212★, 43.213★, 43.220, one 400-level credit, and one other credit at the 200 or 300 level. The student's program for the Second and Third years must be approved by the Supervisor of Major Studies for the Department.

Economics 43.202★ and 43.203★ replace and are equivalent to Economics 43.200 (no longer offered), Economics 43.212★ and 43.213★ replace and are equivalent to 43.210 (no longer offered).

A Major student must maintain a minimum grade-point average of C- to remain in the program. For purposes of determining a Major student's average at graduation, only required credits will be considered.

### Combined Majors

Combined Major students will complete Mathematics 69.109★ and 69.119★ and five credits in Economics: Economics 43.100, 43.202★, 43.203★, 43.212★, 43.213★, one 400-level credit in Economics and one other Economics credit chosen in consultation with the Supervisor of Major Studies. Students in the Combined Major program must maintain a minimum grade point average of C- to remain in the program.

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## Honours Programs

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The Honours programs may be entered in First year or by transfer from the Major programs if minimum Honours standing has been obtained. The student's program for the Second and subsequent years must be planned in consultation with the Supervisor of Honours Studies of the Department.

Honours students should be especially careful not to accumulate more than three discredits after admission to the course-credit system. (See p. 87, article 4.4.)

### Honours in Economics

The requirement for an Honours degree is a minimum of 20 credits with at least nine credits in Economics and one credit in Mathematics. The Honours requirements include: Mathematics 69.109★ and 69.119★ or equivalent; Economics 43.100, 43.202★, 43.203★, 43.212★, 43.213★, 43.220, 43.420★, 43.421★, 43.490, 43.499★, two and a half additional credits in Economics, at the 400 level, which must include either Economics 43.482★ or 43.483★ or 43.485.

An Honours Essay (Economics 43.498) with a minimum grade of *B-* may be written to earn one and a half credits at the 400 level. Students who choose to do the Honours Essay must have a detailed outline of the Essay approved by their adviser and by the Honours Supervisor before the last day for withdrawal from full-credit courses. In the absence of such an approved outline, the Department may require the student to withdraw from the Honours Essay.

For purposes of determining an Honours student's standing at graduation, only required credits will be considered. If a student has taken more than the minimum number of 20 credits, the lowest grades among optional credits taken over the minimum will be disregarded in computing final standing.

### Normal Course Pattern in Honours Economics

*First year:* Economics 43.100, Mathematics 69.109★ and 69.119★.

*Second year:* Economics 43.202★, 43.203★, 43.212★, 43.213★, 43.220.

*Third year:* Economics 43.420★ and 43.421★; one additional Economics credit at the 400 level, to include one of: Economics 43.482★, 43.483★ or 43.485.

*Fourth year:* Economics 43.490, 43.499★, one and a half Economics credits at the 400 level.

Other course patterns may be arranged after consultation with the Supervisor of Honours Studies.

### Combined Honours

Students may apply for Combined Honours in Economics and another discipline. Students should consult the Supervisor of Honours Studies.

Students in the Combined Honours program are normally required to take one credit in Mathematics and at least seven credits in Economics, of which three credits are at the 400 level. The requirements are: Mathematics 69.109★ and 69.119★ or equivalent; Economics 43.100, 43.202★, 43.203★, 43.212★, 43.213★, 43.220★, 43.420★, 43.421★, 43.490, 43.499★, and an additional half credit at the 400 level. The Honours Essay (Economics 43.498) with a weight of one and a half credits, requiring a minimum grade of *B-* may be written in Economics.

The minimum of 20 credits and the procedure for computing final standing described above apply to the Combined Honours program.

The Combined Honours programs in four related fields are described in greater detail below.

### Normal Course Pattern in Combined Honours in Economics

*First year:* Economics 43.100; Mathematics 69.109★ and 69.119★.

*Second year:* Economics 43.202★, 43.203★, 43.212★, 43.213★, 43.220 (or recognized equivalent).

*Third year:* Economics 43.420★ and 43.421★.

*Fourth year:* Economics 43.490, 43.499★ and one additional half credit in Economics at the 400 level.

Other course patterns may be arranged after consultation with the Supervisor of Honours Studies.

### Combined Honours in Economics and Political Science

Students intending to follow this program should take Mathematics 69.109★ and 69.119★ and Economics 43.100 or Political Science 47.100 (or preferably both) in the First year. The choice of courses in subsequent years will be subject to the approval of the two departments. The Honours requirements include at least an additional six credits in Economics and six credits in Political Science, one of which must be Political Science 47.498 or Economics 43.498 to be taken in the student's final year. These will be arranged so that students may transfer either to full Honours in Political Science or to full Honours in Economics at the end of the Third year if they then wish to specialize more intensively. Students must also take the comprehensive examination in Economics and meet the language requirements of the Department of Political Science. Economics 43.420★ and 43.421★ are required.

### Combined Honours in Economics and Mathematics

Students intending to take this program take seven credits in Economics and nine in Mathematics and satisfy the comprehensive examination in Economics. Each year's program should be determined in consultation with the two departments.

The Economics requirements are: Economics 43.100, 43.202★, 43.203★, 43.212★, 43.213★, either 43.220 or Mathematics 69.257★ and 69.259★, Economics 43.420★, 43.421★, 43.490, 43.499★, a half credit at the 300 level or above, and a half credit at the 400 level.

The Mathematics requirements are: Mathematics 69.102, 69.112 (or their equivalents), either Mathematics 69.257★ and 69.259★ or Economics 43.220, Mathematics 70.200, 70.210, 70.260, 70.301★, 70.302★, 70.350, a half credit at the 300 level or above, and one credit at the 400 level.

### Combined Honours in Economics and Journalism

Students in this program are required to complete a total of 21 credits and may choose to graduate with either a B.A. (Honours) or B.J. (Honours).

The Economics requirements are: Mathematics 69.109★ and 69.119★ Economics 43.100, 43.202★, 43.203★, 43.212★, 43.213★, 43.220, 43.420★, 43.421★, 43.490, 43.499★; an approved credit in Economic History and a half-credit option in Economics at the 400 level. The Journalism requirements are: a language course, preferably French, (acceptable First-year French courses are 20.102, 20.108 and 20.110), Journalism 28.100, 28.101★, 28.200, 28.220, 28.320, 28.351★, 28.421, 28.498.

*Note:*

Journalism 28.320 is a two-credit course.

### Combined Honours in Economics and Sociology

The Economics requirements are: Mathematics 69.109★ and 69.119★, Economics 43.100, 43.202★, 43.203★, 43.212★, 43.213★, 43.220 (or Sociology 53.370), 43.420★, 43.421★, 43.490, 43.499★ and an additional half credit at the 400 level.

The Sociology requirements are: Sociology 53.100 or Anthropology 54.100 or Sociology-Anthropology 56.100;



Sociology-Anthropology 56.200★ and either Sociology 53.201★ or Anthropology 54.201★; Sociology 53.370 or Economics 43.220; Sociology-Anthropology 56.305 or Sociology 53.306 (if the Honours Essay is written in Sociology, Sociology 53.306 is recommended); three other credits as follows:

(a) if the Honours Essay is written in Sociology: 53.495 or 53.498; and two additional credits in Sociology, one of which must be taken at the 400 or 500 level; or

(b) three additional credits in Sociology, one of which must be taken at the 400 or 500 level.

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## Graduate Program

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The Department of Economics offers studies leading to the degree of Master of Arts and to the degree of Doctor of Philosophy. For further details consult the Graduate Studies and Research Calendar.

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## Courses Offered

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### Note:

Not all of the courses listed below can be made available each year in the Fall and Winter terms. Students are advised to consult with the department prior to registration to ascertain those courses offered in 1986-87.

### Economics 43.100

#### Introduction to Economics

An introduction to the major tools and policy problems of economics. Economic analysis is applied to a variety of contemporary problems such as pollution, poverty, the control of monopoly, unemployment, inflation and international economic problems.

Day and Evening divisions: Lectures three hours a week. Discussion groups (one hour) may be arranged.

### Economics 43.201★

#### Introduction to Microeconomic Theory and Analysis

The main topics in microeconomic theory with illustrations of their applications. Not open to students in Economics or Business.

Credit will not be given for both Economics 43.201★ and either of 43.202★ or 43.203★.

Prerequisite: Economics 43.100 or permission of the Department.

Lectures and discussions three hours a week.

### Economics 43.202★

#### Intermediate Microeconomics I

An analysis of consumer demand, production, costs and an introduction to market structures, with special reference to the determination of conditions which maximize social welfare.

Students should be aware that elementary techniques of the level of Mathematics 69.007★ may be introduced and used in some sections of this course. Credit will not be given for both Economics 43.201★ and 43.202★.

Prerequisite: Economics 43.100 (grade of C- or better).

Day and Evening divisions: Lectures three hours a week.

### Economics 43.203★

#### Intermediate Microeconomics II

An analysis of distribution, market structures and general equilibrium theory, with special reference to the determination of conditions that maximize social welfare. Students should be aware that elementary techniques of

the level of Mathematics 69.007★ may be introduced and used in some sections of this course. Credit will not be given for both Economics 43.201★ and 43.203★.

Prerequisite: Economics 43.202★.

Day and Evening divisions: Lectures three hours a week.

### Economics 43.211★

#### Introduction to Macroeconomic Theory and Analysis

The main topics in macroeconomic theory with illustrations of their application. Not open to students in Economics or Business.

Credit will not be given for both Economics 43.211★ and either of 43.212★ or 43.213★.

Prerequisite: Economics 43.100 or permission of the Department.

Lectures and discussions three hours a week.

### Economics 43.212★

#### Intermediate Macroeconomics I

An examination of the standard macroeconomic model of a closed economy, emphasizing both the aggregate demand and the aggregate supply side of the economy. The model is used to analyze basic macroeconomic problems and evaluate proposed solutions of these problems.

Students should be aware that elementary techniques of the level of Mathematics 69.007★ may be introduced and used in some sections of this course. Credit will not be given for both Economics 43.211★ and 43.212★.

Prerequisite: Economics 43.100 (grade of C- or better).

Day and Evening divisions: Lectures three hours a week.

### Economics 43.213★

#### Intermediate Macroeconomics II

An extension of the standard macroeconomic model to include topics such as macroeconomic theory and policy in an open economy, theoretical development and empirical analysis of basic macro relationships, the short-run dynamics of wage-price adjustment and economic growth.

Students should be aware that elementary techniques of the level of Mathematics 69.007★ may be introduced and used in some sections of this course. Credit will not be given for both Economics 43.211★ and 43.213★.

Prerequisite: Economics 43.212★

Day and Evening divisions: Lectures three hours a week.

### Economics 43.220

#### Statistical Methods in the Social Sciences

An introduction to statistical inference.

Prerequisites: Mathematics 69.109★ and 69.119★ or equivalent and one of Economics 43.100 (grade of C- or better), Political Science 47.100 or Sociology 53.100, or permission of the Department.

Day and Evening divisions: Lectures three hours a week, laboratory two hours a week.

### Economics 43.250★

#### Introduction to Business Finance

A study of business firms' financing and dividend policy decisions, cost of capital and short-term asset management problems. (Also listed as Business 42.250★.)

Prerequisites: Economics 43.100, Business 42.100 (or 42.101★ and 42.102★) and Mathematics 69.119★ or equivalent (a grade of C- or better in all of these courses). Day and Evening divisions, Fall and Winter terms: Lectures three hours a week.

**Economics 43.303★**

**Public Finance**

Public expenditures and their relations to economic activity; public revenues; principles of taxation; public borrowing and the public debt; fiscal policy; federal-provincial fiscal arrangements.

Prerequisite: Economics 43.100.

**Economics 43.305★**

**Selected Topics in Economic History**

Examination of the economic development of North America or Europe or other possible selected sets of countries. Countries examined will vary from year to year.

Prerequisite: Economics 43.100 or permission of the Department.

**Economics 43.320★**

**Economics of Information and the Media**

An introduction to the economics of information and the media, with a focus on the analysis of production and distribution of information, the application of theory to selected communications-media industries in Canada, and the analysis of existing Canadian policies.

Prerequisite: Economics 43.100.

Lectures two hours a week.

**Economics 43.321★**

**National Accounting**

An introduction to modern social accounting framework, encompassing the national income and expenditure accounts, input-output accounts, financial flow and national balance sheet accounts, real domestic product by industry-of-origin accounts, balance-of-payment accounts. Emphasis is on Canadian practice with attention to new developments such as national-wealth accounts, productivity measurement, measuring the "underground economy."

Prerequisite: Economics 43.100.

Lectures three hours a week.

**Economics 43.324★**

**An Economic Analysis of Law**

An introduction to the application of economic principles and methodology to a variety of legal problems with particular emphasis on the theory of property rights and the allocation of resources.

Prerequisite: Economics 43.100.

Lectures three hours a week.

**Economics 43.325**

**The Economic Development of Canada**

A general survey of Canadian economic development from 1534 to 1970.

Prerequisite: Economics 43.100 or permission of the Department.

Lectures three hours a week.

**Economics 43.326★**

**Economic Theories of Federalism**

An introduction to the economic dimensions of federalism, with particular reference to Canadian experience. The issues to be covered include: fiscal federalism; the impact of federal economic policies on provincial economies; the consequences of province-serving policies (trade barriers, impediments to factor flows, etc.) for national economic performance; decentralization possibilities for fiscal and economic development policies. Analytical tools to be developed include interregional trade models, interregional input-output analysis and interregional balance of payments models.

Prerequisite: Economics 43.100. Students are encouraged to take Political Science 47.301★ to obtain an appreciation of the political dimension of many of these issues. Lectures three hours a week.

**Economics 43.331★**

**Social Economics**

An examination of some of the ways in which public authorities attempt to reshape the economic environment towards a greater conformity to social values. The objectives and practice of social security schemes, housing policy, "the war on poverty," etc. are considered. Credit will not be granted for both Economics 43.331★ and 43.330 (no longer offered).

Prerequisite: Economics 43.100.

Lectures three hours a week.

**Economics 43.335**

**Political Economy in the Modern State**

An examination of the role of government in the economy with special emphasis on alternate forms of social co-ordination and the advantages and disadvantages of each form in the Canadian system.

Prerequisite: Economics 43.100.

Lectures two hours a week.

**Economics 43.341★**

**Regional Economics**

An examination of the issue of unequal distribution of economic activity between spatially defined regions. Emphasis is placed on an evaluation of the current pattern in Canada since World War II, considering "natural" adjustment mechanisms, policy tools that have been developed, and the outlook for the future. Lessons are drawn from empirical and theoretical studies of the issue on other economies.

Credit will not be granted for both Economics 43.341★ and 43.340 (no longer offered).

Prerequisite: Economics 43.100.

Lectures three hours a week.

**Economics 43.342★**

**Special Studies in Economics**

Content of this course varies year by year, topics to be determined by the instructor invited to offer the course.

Prerequisite: Economics 43.100.

Lectures three hours a week.

**Economics 43.344★**

**Economic Thought and Policy in Canada**

An account of the interrelationship between economic theories expounded in Canada and their issue in national policy.

Prerequisite: An introductory course in one of the social sciences or Canadian history.

**Economics 43.346★**

**Agricultural Economics**

An examination of the agricultural industry in the national economy and in low-income societies. The course emphasizes the working out of the basic forces that determine supply-demand for the industry and the functional distribution of income among the factors of production. The place of institutions is examined and public policy is critically reviewed.

Credit will not be granted for both Economics 43.346★ and 43.345 (no longer offered).

Prerequisite: Economics 43.100.



**Economics 43.350★****Corporate Finance**

An examination of the major issues in corporate finance and applied financial management. Topics include: introduction to portfolio theory, the capital asset pricing model, cost of capital, capital structure and dividend policy, lease financing, capital budgeting under uncertainty, mergers and consolidations. (Also listed as Business 42.350★.)

Prerequisites: Economics 43.203★, 43.250★, and 43.220 or Mathematics 69.267★.

Day division, Fall and Winter terms: Lectures two hours a week.

**Economics 43.351★****Principles of Investments**

Procedures and methods of investment analysis. The stock and bond markets. Government regulation of securities markets. Valuation of common stocks and fixed income securities. Options, warrants, convertibles and commodities. (Also listed as Business 42.352★.)

Prerequisites: Economics 43.250★, and 43.220 or Mathematics 69.267★.

Day division, Fall and Winter terms: Lectures two hours a week.

**Economics 43.356★****Introduction to Labour Economics**

An introduction to the basic principles of labour economics. Topics covered include: labour markets, the supply of labour, the demand for labour, labour mobility and migration, wage structures, the logic of trade union action, economics of trade unions, the impact of trade unions and selected macroeconomic aspects of the labour market.

Precludes additional credit for Economics 43.435.

Prerequisite: Economics 43.100.

Lectures three hours a week.

**Economics 43.357★****Introduction to Industrial Relations**

An introduction to industrial relations covering such topics as: industrial relations systems, the functioning of trade unions, collective bargaining in Canada and Canadian public policy in industrial relations. (Also listed as Business 42.317★.)

Prerequisite: Economics 43.100.

Day and Evening divisions, Fall and Winter terms:

Lectures three hours a week.

**Economics 43.360★****Topics in International Economics**

Special topics in international trade are examined. Among possible areas to be considered are theory and policy in international trade, finance, investment and development. Intended for students planning to take only one half credit in international economics at the 300 level. More comprehensive coverage of international economics may be achieved by taking both Economics 43.361★ and 43.362★.

Precludes additional credit for Economics 43.361★ and 43.362★.

Prerequisite: Economics 43.100 or permission of the Department.

Lectures three hours a week.

**Economics 43.361★****Introduction to International Trade**

An extension of the basic principles of economics to international trade. Topics covered include the theory of international specialization, tariffs and other barriers to

trade, trade liberalization and economic integration, international movements of labour and capital, trade and development.

Precludes additional credit for Economics 43.360★ and 43.461★.

Prerequisite: Economics 43.100.

Lectures three hours a week.

**Economics 43.362★****International Monetary Problems**

A discussion of the theory and institutions of the international monetary system, and the related balance of payments problems of nation states.

Precludes additional credit for Economics 43.360★ and 43.462★.

Prerequisite: Economics 43.100.

Lectures three hours a week.

**Economics 43.363★****Introduction to Economic Development**

A discussion of the principles of economic development. Application to the problems of the developing countries.

Prerequisite: Economics 43.100.

Lectures three hours a week.

**Economics 43.365★****The Economics of Planning**

This course considers several aspects of the economics of planning.

Prerequisite: Economics 43.100.

**Economics 43.371★****Socialist Economic Systems: The Soviet Model**

This course examines Soviet socialism in its historical development and current practice. Topics include: Soviet industrialization, central planning, collectivization of agriculture, foreign economic relations and recent trends in the Soviet economy. The Soviet economy is studied in the context of comparative economic systems.

Prerequisite: Economics 43.100.

Lectures and discussions three hours a week.

**Economics 43.372★****Socialist Economic Systems: Eastern European Variants**

This course examines the two major Eastern European variants of the traditional model of a centrally planned, socialist economy. Hungary's "New Economic Mechanism" and Yugoslavia's "Self-Managed Economy" are studied in the context of economic reform in Eastern Europe.

Prerequisite: Economics 43.100.

Lectures and discussion three hours a week.

**Economics 43.380★****Topics in Canadian Economic Policy**

Economic analysis applied to selected policy areas, issues or institutions. One or more of the following topics may be dealt with: decision-making by bureaucratic institutions, policy problems arising from poverty, the economics of natural resources and pollution, urban economics.

Prerequisite: Economics 43.100.

Lectures three hours a week.

**Economics 43.385★****The Economics of Natural Resources**

This course is concerned with the application of economic analysis to questions concerning natural-resource use, management and conservation, as well as market failures and environmental effects. Policy problems relating to natural resources are discussed.

Prerequisite: Economics 43.100.  
Lectures three hours a week.

**Economics 43.404★**  
**Operations Research I**

Linear programming, networks, and such techniques as PERT (Program Evaluation and Review Technique) and CPM (Critical Path Method).  
Precludes additional credit for Business 42.230★.  
Prerequisites: Mathematics 69.109★ and 69.119★ (grade of C- or better).  
Lectures three hours a week.

**Economics 43.405★**  
**Operations Research II**

Dynamic programming, inventory models, queuing, simulation, non-linear programming. (Also listed as Business 42.435★.)  
Prerequisites: Business 42.230★ or Economics 43.404★, or Mathematics 69.381★, and Economics 43.220 (grade of C- or better) or Mathematics 69.267★.  
Lectures three hours a week.

**Economics 43.406★**  
**Economics of Uncertainty and Information**

An exploration of how uncertainty, imperfect information and asymmetric information affect the allocation of resources and the performance of markets and alternative co-ordinating mechanisms. (See also Business 42.439.)  
Prerequisites: Economics 43.220 or Mathematics 69.266★ and 69.267★, and Economics 43.202★, with a minimum grade point average of 4.0 (C-) on these prerequisites.  
Lectures three hours a week.

**Economics 43.407★**  
**Statistical Decision Theory**

An examination of Bayesian and classical approaches to decision-making under uncertainty for individuals and firms. (See also Business 42.439.)  
Prerequisite: Economics 43.220 or Mathematics 69.266★ and 69.267★ (grade of C- or better).  
Students are advised that it is preferable to take Economics 43.406★ prior to 43.407★.  
Lectures three hours a week.

**Economics 43.408★**  
**Advanced Corporate Finance**

An in-depth examination of some of the major theoretical issues in corporate finance. This course requires analyses and presentations of both articles from the finance literature and case studies. (Also listed as Business 42.450★.)  
Prerequisite: Economics 43.350★.  
Day division, Winter term: Lectures two hours a week.

**Economics 43.410★**  
**Finance and Capital Markets**

The workings and structure of Canada's capital markets with particular reference to differing classes of institutional lenders and borrowers; relationships of non-bank financial intermediaries to the banking system, regulatory agencies and the public, the impact of these institutions on corporate financial and national economic policy, access to foreign capital markets and external financing of Canadian economic development. (Also listed as Business 42.453★.)  
Prerequisites: Economics 43.202★, 43.203★, 43.212★, 43.213★ and 43.220. Mathematics 69.267★ may be substituted for 43.220 (grade of C- or better in each).  
Day division, Fall and Winter terms: Lectures and seminars three hours a week.

**Economics 43.411★**  
**Investment Management**

Analysis of investment requirements for individuals and institutional investors: liquidity, risk and return; portfolio design, construction, management and control; performance measurement; capital market theory. (Also listed as Business 42.452★.)  
Prerequisite: Economics 43.351★.  
Day division, Winter term: Lectures and seminars two hours a week.

**Economics 43.415**  
**History of Economic Thought**

The crucial achievements in economic theory and doctrine in the nineteenth and twentieth centuries are studied. Special emphasis is given to the interrelationship between the social environment and economic thought, especially to the role of economics in the development of the national state and international institutions.  
Prerequisite: One of Economics 43.202★ and 43.203★, 43.201★, 43.212★ and 43.213★, or 43.211★, with an average grade of C- or better, or permission of the Department.  
Lectures and seminars three hours a week.

**Economics 43.420★**  
**Microeconomic Theory**

Theory of individual economic behaviour, theory of exchange and production, general equilibrium, alternative theories of pricing, allocation and distribution. Elementary tools of mathematics are employed in the exposition of most topics.  
Prerequisites: Economics 43.202★ and 43.203★ (with an average grade of C+ or better), 43.220 (may be taken concurrently) and Mathematics 69.109★ and 69.119★.  
This course is required for students in the Honours program in Economics.  
Lectures three hours a week.

**Economics 43.421★**  
**Macroeconomic Theory**

Macroeconomic theory and its implications for economic policy are examined in this course. Emphasis is placed on major controversies in the field, with consideration given to topics such as: determination of national income, employment, price level and interest rates; commodity, labour and asset market behaviour; and fiscal and monetary management for economic stabilization. Elementary tools of mathematics are employed in the exposition of most topics.  
Prerequisites: Economics 43.212★ and 43.213★ (with an average grade of C+ or better), 43.220 (may be taken concurrently) and Mathematics 69.109★ and 69.119★.  
This course is required for students in the Honours program in Economics.  
Lectures three hours a week.

**Economics 43.426★**  
**Topics in North American Economic History**

An examination of methodology applicable to the analysis of economic history. Intensive examination of selected topics in North American economic history.  
Prerequisites: Economics 43.202★, 43.203★, 43.212★ and 43.213★, with an average grade of C- or better on these prerequisites, or permission of the Department.  
Lectures three hours a week.

**Economics 43.427★**  
**Topics in European Economic History**

An examination of methodology applicable to the analysis of economic history. Intensive examination of selected



topics in European economic history.

Prerequisites: Economics 43.202★, 43.203★, 43.212★ and 43.213★, with an average grade of C- or better on these prerequisites, or permission of the Department. Lectures three hours a week.

#### Economics 43.430

##### **Industrial Organization and Public Policy**

An analysis of the organization of Canadian industry, with reference to associated U.S. industry where necessary. A few representative industries are examined in some detail. Price theory is used to distinguish economic from institutional factors affecting the structure of the economy. Emphasis is placed upon public policies that affect, intentionally or otherwise, the organization and behaviour of industry, e.g., public utility regulation, control of restrictive practices, commercial policy and price supports.

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★, with an average grade of C- or better on these prerequisites.

Lectures and seminars three hours a week.

#### Economics 43.435

##### **Manpower Economics and Labour Policy**

A discussion of topics in labour economics with emphasis on the Canadian economy. Price theory is applied to the labour market. Emphasis is placed upon public policies that affect the organization and performance of labour, e.g. equal pay legislation. Topics of current interest are examined in light of recent research findings.

Precludes additional credit for Economics 43.356★.

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★, with an average grade of C- or better on these prerequisites.

Lectures three hours a week.

#### Economics 43.439★

##### **Industrial Economics**

This course examines the empirical application of micro-economics, with special emphasis on the Canadian economy. Topics include: consumer demand, firm production and investment, and industrial and trade structure. Prerequisites: Economics 43.202★, 43.203★, and 43.220, with a *minimum* grade point average of 4.0 (C-) on these prerequisites.

#### Economics 43.441★

##### **Public Finance: Taxation**

A discussion of the theory of taxation and an examination of empirical attempts to quantify the theory. Some topics of current interest, such as the redistribution of income in Canada and tax reform are examined.

Credit will not be given for both Economics 43.441★ and 43.440 (no longer offered).

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★, with an average grade of C- or better on these prerequisites.

Lectures three hours a week.

#### Economics 43.442★

##### **Public Finance: Expenditures**

A discussion of the theory of government expenditures and an examination of empirical attempts to quantify the theory. Some topics of current interest, such as expenditures and grants in the Canadian federalism are examined.

Credit will not be given for both Economics 43.442★ and 43.440 (no longer offered).

Prerequisites: Economics 43.202★ and 43.203★, or

43.201★, with an average grade of C- or better on these prerequisites.

Lectures three hours a week.

#### Economics 43.445★

##### **Welfare Economics**

An examination of contemporary welfare economics and its applications.

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★, with an average grade of C- or better on these prerequisites.

#### Economics 43.446★

##### **Economic Dynamics: Growth**

An examination of modern steady equilibrium economic growth encompassing neoclassical, neo-Keynesian and neo-Ricardian theories of growth and accumulation. The theories of money and capital (and controversies) are examined in a growth context. Some discussion of optimum saving and accumulation is also included.

Prerequisites: Economics 43.202★, 43.203★, 43.212★ and 43.213★, with an average grade of C- or better on these prerequisites.

Lectures and seminars three hours a week.

#### Economics 43.451★

##### **Economic Dynamics: Business Cycles**

An analysis of the nature and causes of fluctuations in income, prices and employment. A review of theories of short-run economic dynamics, with particular references to how expectations are formed. Some consideration is given to countercyclical government policies.

Prerequisites: Economics 43.212★ and 43.213★, with an average grade of C- or better on these prerequisites.

Lectures and seminars three hours a week.

#### Economics 43.457★

##### **The Economics of Development**

An examination of some theoretical approaches to the economics of development, together with analysis of some economic policy issues of a largely internal character, such as intersectoral investment allocation, income distribution, unemployment, and investment in human development.

Credit will not be given for Economics 43.457★ and 43.456 (no longer offered).

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★; and 43.212★ and 43.213★, or 43.211★, with an average grade of C- or better on these prerequisites.

Lectures three hours a week.

#### Economics 43.458★

##### **International Aspects of Economic Development**

An analysis of the international economic policy problems of development in Asia, Africa and Latin America, focusing on international trade, direct foreign investment, technological transfer, regional integration, debt and development financing, and international migration.

Credit will not be given for both Economics 43.458★ and 43.456 (no longer offered).

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★; and 43.212★ and 43.213★, or 43.211★, with an average grade of C- or better on these prerequisites.

Lectures three hours a week.

#### Economics 43.461★

##### **International Trade Theory and Policy**

International trade theory and its implications for economic policy. Topics such as determinants of trade and specialization, gains from trade and commercial policy, international factor mobility, growth and development.



Credit will not be given for both Economics 43.461★ and 43.460 (no longer offered). Precludes additional credit for Economics 43.361★.

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★, with an average grade of C- or better on these prerequisites.

Lectures three hours a week.

#### Economics 43.462★

##### **International Monetary Theory and Policy**

International monetary theory and its implications for economic policy. Topics such as sources of disequilibrium and adjustment in the balance of payments under fixed versus flexible exchange rates, international capital movements, and international monetary reform.

Credit will not be given for both Economics 43.462★ and 43.460 (no longer offered). Precludes additional credit for Economics 43.362★.

Prerequisites: Economics 43.212★ and 43.213★, or 43.211★, with an average grade of C- or better on these prerequisites.

Lectures three hours a week.

#### Economics 43.465

##### **Industrial Relations**

An examination of various theories concerning industrial relations systems, human resource utilization and organizational maintenance and stress. Application of the core analytical disciplines (political science and economics) to the study of conflict resolution among management, workers and governments in the pluralistic environment of the firm. The operationality and policy significance of a number of royal commission reports and studies are examined in the light of these various theories of industrial and human relations.

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★, with an average grade of C- or better, and 43.357★.

Lectures three hours a week.

#### Economics 43.467★

##### **Monetary Theory I**

This course is designed to provide the analytical tools used in discussions of monetary theory and policy. The foundations of monetary theory are emphasized as are the effects of monetary change on economic activity coming through classical, Keynesian and other modern money transmission mechanisms. The policy implications of the "optimum quantity of money," various estimates of the money supply and demand, difficulties of implementing policy in open and closed economies and in a growth context are also examined.

Credit will not be given for both Economics 43.467★ and 43.466 (no longer offered).

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★; and 43.212★ and 43.213★, or 43.211★, with an average grade of C- or better on these prerequisites.

Lectures three hours a week.

#### Economics 43.468★

##### **Monetary Theory II**

A continuation of Economics 43.467★. The course analyzes in depth past and current controversies in monetary theory particularly as they relate to policy issues.

Credit will not be given for both Economics 43.468★ and 43.466 (no longer offered).

Prerequisite: Economics 43.467★.

Lectures three hours a week.

#### Economics 43.480

##### **Research Seminar in Urban Economics**

An enquiry into the internal dynamics of cities and inter-urban relationships primarily through directed research.

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★; and 43.220 or Mathematics 69.266★ and 69.267★, with an average grade of C- or better on these prerequisites.

Seminar three hours a week.

#### Economics 43.482★

##### **Applied Quantitative Economics**

This course provides an integration of economic theory, statistical methods and empirical analysis. A selected empirical research literature in economics is analyzed in the context of its statistical and econometric methodology. (Not open to students who have taken or are taking Economics 43.485.)

Prerequisite: Economics 43.220 or Mathematics 69.266★ and 69.267★, with an average grade of C- or better on these prerequisites.

Lectures three hours a week.

#### Economics 43.483★

##### **Applied Time Series Analysis in Economics and Business**

An introduction to basic concepts of time series analysis with emphasis on model building and forecasts in economics and business. Topics include: models for stationary and nonstationary time series, model identification, estimation, computation of forecasts and transfer function models.

Prerequisite: Economics 43.220 or Mathematics 69.266★ and 69.267★, with an average grade of C- or better on these prerequisites.

Lectures three hours a week.

#### Economics 43.485

##### **Introduction to Econometrics**

Introduction to problems of structural estimation of economic models, single equation estimation and related problems, simultaneous estimation for interdependent systems of linear form, non-linear estimation, Monte Carlo experiments to derive small sample properties of estimators. Some project in structural estimation is undertaken or assigned.

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★; and 43.220 or Mathematics 69.266★ and 69.267★ or equivalents, with an average grade of C- or better on these prerequisites.

Lectures two hours a week, laboratory one hour a week.

#### Economics 43.486★

##### **Comparative Economic Systems I**

This course builds a framework for the study and comparison of economic systems. Using basic economic tools, it discusses the properties and comparative advantages of different contemporary economies, as well as the forces that cause or prevent change. Some Marxian theory is included, along with analyses of the role of property rights, of incentives and motivation, and of the interaction between economic and political systems. Precludes additional credit for Economics 43.470 (no longer offered).

Prerequisite: Economics 43.201★ or 43.202★ with a grade of C- or better, or permission of the Department.

#### Economics 43.487★

##### **Comparative Economic Systems II**

A comparison of contemporary economic systems. Such diverse economies as Japan, West Germany, Sweden, the U.S.S.R., China, Cuba, Yugoslavia and Hungary may



be explored.

Precludes additional credit for Economics 43.470 (no longer offered).

Prerequisite: Economics 43.201★ or 43.202★ with a grade of C- or better, or permission of the Department.

#### Economics 43.490

##### **Honours Seminar**

The seminar focuses on the use of basic economic theory as a tool to analyze economic problems and issues. Students meet regularly to work out assigned problems in class, to write examinations and/or to discuss assigned papers.

Open to Fourth-year Honours students with permission of the Department.

Day division: Seminar three hours a week.

#### Economics 43.493★

##### **Tutorial in Economics**

An additional tutorial in Economics may be taken subsequent to, or concurrently with Economics 43.490.

Prerequisite: Permission of the Department.

#### Economics 43.494★

##### **Tutorial in Economics**

An additional tutorial in economics may be taken subsequent to or concurrently with Economics 43.490.

Prerequisite: Permission of the Department.

#### Economics 43.498 (1.5 credits)

##### **Honours Essay**

Students taking Honours in economics may write an Honours essay during their final year. This essay counts for one and a half credits. Students work under an individual faculty adviser.

Prerequisite: Permission of the Department.

#### Economics 43.499★

##### **Comprehensive Examination**

Prerequisite: Permission of the Department.

Fall and Winter terms.

#### **Courses Planned for Summer School and Evening Division**

The Department attempts to offer the following courses each Summer: Economics 43.100, 43.202★, 43.203★, 43.212★, 43.213★. Each year, availability of instructors permitting, at least one half-credit course at the 300 level and a course at the 400 level will be offered. For Summer 1986 courses, see 1986 Summer Session Calendar.

The Department offers the following Evening courses each year: Economics 43.100, 43.202★, 43.203★, 43.212★, 43.213★, 43.220, plus a choice of optional courses that will vary from year to year depending upon projected enrolments and availability of instructors.

# Department of English Language and Literature

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## Officers of Instruction

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### *Chairman*

A.D. McLay

### *Supervisor of Graduate Studies*

R.H. MacDonald

### *Majors and Honours Advisers*

L.T.R. McDonald

J.M. Wilcox

### *Professors Emeriti*

A.M. Beattie

L.A. Cormican

P. Cruttwell

G.B. Johnston

R.L. McDougall

### *Professors*

V.K. Chari

M.J. Edwards

M. Gnarowski

C. Haines

J.J. Healy

B.W. Jones

R.H. MacDonald

R.D. Mathews

A.T. Tolley

G.J. Wood

D.J. Wurtele

### *Associate Professors*

D.A. Beecher

M.I. Cameron

J.D. Campbell

T.H. Coulson

H.P. Duchemin

B.C. Garner

F.B. Gildenhuis

M. Gunn

A.W. Heidemann

T.J. Henighan

R.L. Hogg

R.G. Laird

B.G. Lecker

C. Levenson

R.B. Lovejoy

L.A. Mann

L.T.R. McDonald

A.D. McLay

T.J. Middlebro'

J.R. Morrison

J. Noonan

K. O'Donnell

E.D. Padolsky

I.W.V. Pringle

R.B. Rutland

J.A. Steele

M.B. Thompson

A. Tilson

J.M. Wilcox

### *Assistant Professor*

T.G. Nollet

### *Adjunct Professor*

L.D. Young

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## General Information

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The Department of English Language and Literature introduced a revised program in 1983-84. Students who first registered in a Major or Honours program in a session prior to 1983-84 may proceed under either the old or the new requirements. Students who first registered in a Major or Honours program in 1983-84 or later must complete the new program requirements. Students in doubt about their status should consult the Registrar or the Major and Honours Advisers in English.

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## Graduation Requirements

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all departmental regulations and requirements as set out below.

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## Major Programs

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The Major in English consists of a minimum of six credits in English, as follows:

1. A 100-level credit;
2. English 18.230;
3. A credit in Canadian literature;
4. One credit at the 300 or 400 level in British literature in the period prior to 1900 (English 18.236 may satisfy this requirement);
5. One additional credit at the 300 or 400 level;
6. One additional credit.

### *Note:*

English 18.200★, 18.201★, 18.268, 18.291 and 18.293 may not be counted towards the Major requirements but they may be counted as options towards the degree.

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## Combined Major Programs

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A Combined Major in English and another discipline consists of at least five credits in English, including:

1. A 100-level credit;
2. English 18.230;
3. A credit in Canadian literature;
4. One credit at the 300 or 400 level (English 18.236 may satisfy this requirement);
5. One additional credit.

English 18.200★, 18.201★, 18.268, 18.291 and 18.293 may not be counted towards Combined Major requirements but they may be counted as options towards the degree.

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## Academic Standing

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In order to continue in the Major program, a student must attain a grade-point average of 4.0 or better in the First-year course in English. A grade-point average of at least 4.0 must be maintained thereafter in English courses.



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### Honours Programs

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All students who meet the general University Honours requirements, and who have a grade-point average of at least 6.0 in English, will be admitted to, and permitted to continue in, the Honours program. It should be noted that a grade-point average of 6.5 in English is required for graduation in Honours. Other applicants will be given individual consideration on application to the Department. Honours students must have their programs approved at registration by a departmental adviser. The Honours program consists of 20 credits after Grade 13 (25 after Grade 12), of which 11 must be in English, including the following:

1. A 100-level credit;
2. English 18.230;
3. One credit in each of the following categories:
  - (a) Medieval literature;
  - (b) Renaissance non-dramatic literature;
  - (c) Renaissance drama;
  - (d) Restoration, Eighteenth-century, and Romantic literature;
  - (e) Victorian British literature;
  - (f) Twentieth-century literature.
4. A credit in Canadian literature;
5. Two additional credits.

Of the 11 credits, at least three must be chosen from courses at the 300 or 400 level designated by the Department as seminar courses or courses of independent study.

A single course may satisfy only one requirement in 3 and 4.

For specific information on which courses offered in 1986-87 will satisfy the above-listed period and seminar requirements, please consult the Department's *Handbook of Advice* issued in March 1985.

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### Combined Honours Programs

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Combined Honours programs may be arranged. Six credits in English are required, including:

1. A 100-level credit;
2. English 18.230;
3. A credit in Canadian literature;
4. One credit at the 300 or 400 level in British literature in the period prior to 1900 (English 18.236 may satisfy this requirement);
5. One additional credit at the 300 or 400 level;
6. One additional credit.

Of the six credits at least two must be chosen from courses at the 300 or 400 level designated by the Department as seminar courses or courses of independent study. English 18.200★, 18.201★, 18.268, 18.291 and 18.293 may not be counted towards the English requirements for Combined Honours but they may be counted as options towards the degree.

### Combined Honours, English and Journalism

A Combined Honours program in English and Journalism may be arranged for students who are admitted to the School of Journalism.

Candidates for the degree of Bachelor of Journalism, Combined Honours Journalism and English, take a total of 21 credits, to include Journalism 28.498. The six required English credits are the same as for any other Combined Honours program in English.

Candidates for the degree of Bachelor of Arts, Combined Honours English and Journalism, take a total of 21 credits. The six English credits required for the Combined Honours program must include English 18.498.

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### Certificate in English Language and Composition

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This is an in-service certificate intended primarily for practising teachers and designed to upgrade their knowledge of those areas of language and of writing theory which underlie the new Ontario guidelines and support documents.

Admission requirement: a university degree or teaching certificate.

To receive the Certificate in English Language and Composition, students must meet the following requirements:

1. English 18.295;
2. English 18.297;
3. English 18.495;
4. Two credits chosen from the following: English 18.206, 18.305, Linguistics 29.261★, 29.264★, 29.271★, 29.420, or a course approved by the Department.

#### Note:

The same course cannot be counted towards both a degree and the certificate. If any of the courses required for the certificate have already been taken for a degree, then the student must choose an approved option to replace them. Not all the above-listed courses may be offered in any one year.

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### Graduate Program

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The Department of English Language and Literature offers courses of study leading to the degree of Master of Arts. Students may choose a program consisting of course work and thesis or one consisting entirely of course work. For further details consult the Graduate Studies and Research Calendar and the department's *Handbook of Advice for Graduate Students in English*.

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### Film Course and Writing Seminars in Poetry and Prose Fiction

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The film course (English 18.268) and the writing seminars in poetry and prose fiction (English 18.291 and 18.293) offered in the Department of English Language and Literature carry credit towards the total requirements for the Major and Honours degree and may be counted among the minimum eleven-credit requirements of the Honours program. They cannot, however, be counted among the minimum six-credit requirements of the Major program or the combined Honours program.

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### The Elements of Writing and Business Writing

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The Department of English Language and Literature offers two courses for the School of Business: Business 42.180★, The Elements of Writing, and Business 42.181★, Business Writing. These courses are open only to students in the School of Business. They cannot be counted among the minimum requirements for the Major and Honours programs, including Combined programs, in English.

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### Reading Lists and Advice

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Detailed reading lists will be available from the Department of English Language and Literature (1812 Arts Tower) after April 18.

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### Courses of Interest to Students in Other Disciplines

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The Department offers a number of courses of special interest to students outside the English programs, such as English 18.105 (Writing and Language), which seeks to improve the writing of students from all disciplines; English 18.206 (Children's Literature); English 18.207 (Literature and the Sciences); English 18.208 (Myth and Symbol); English 18.290★ (Literature of the Self); English 18.292 (Women and Literature); English 18.296 (The Writer, Literature and Society).

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### Courses Offered

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English 18.100

#### English Authors from Chaucer to T.S. Eliot

A study of significant works of English literature, presented as a general historical survey from the fourteenth to the twentieth centuries. The authors to be studied include Chaucer, Marlowe, Shakespeare, Donne, Milton, Pope, Swift, Fielding, Keats, Wordsworth, Browning, Dickens, Tennyson, Yeats, Eliot.

Day and Evening divisions: Three hours a week.

Co-ordinator: *T. Middlebro'*

English 18.101

#### English and Continental Texts

A study of works by English and continental writers. The list of authors to be read usually includes Dante, Boccaccio, Chaucer, Shakespeare, Byron, Flaubert, Tolstoy, Ibsen and O'Casey. Consult the instructor or the department for complete reading lists. The continental texts are read in translation.

Day division: Three hours a week.

*C. Haines*

English 18.105

#### Writing and Language

This course seeks to improve the writing of students from all disciplines through a study of the principles of logic, grammar and rhetoric, and through the application of those principles in frequent writing assignments. Various forms of prose (e.g. scientific, expository, narrative, literary) are studied and practised.

Day and Evening divisions: Three hours a week.

Co-ordinator: *J.M. Wilcox*

English 18.162

#### Twentieth-Century Literature

An introduction to literary study, examining the poetry, drama and fiction of the twentieth century, in a representative selection of British, American and Canadian authors. The relation between critical ideas, modern techniques and literary works is emphasized. The course may include works by Lawrence, Conrad, Faulkner, Eliot, Yeats and Williams, and a selection of novels, plays and poems.

Day and Evening divisions: Lectures/seminars three hours a week.

Co-ordinator: *L.T.R. McDonald*

English 18.188

#### Contemporary English-Canadian and French-Canadian Literature

This course, which is offered by faculty members from the English and French Departments, provides a general introduction to and comparison of the two major literatures of Canada. Lectures are given in both English and French. Students are encouraged to use the French language for self-expression but need not do so. (Also listed as Canadian Studies 12.188 and French 20.188.)

Prerequisite: A basic reading knowledge of French.

Day division: Three hours a week.

English 18.200★

#### Theatre Workshop I

A course dealing with the rudiments of theatrical performance: voice, movement, improvisation, interpretation. Exercises are based upon examples drawn from the classic and contemporary repertoires.

Prerequisite: A 100-level credit in English and permission of the Department.

Day division, Fall term: Four hours a week.

*J.D. Campbell*

English 18.201★

#### Theatre Workshop II

A course dealing with techniques of characterization, principles of ensemble performance, scene analysis for actors and directors, styles of performance. Exercises are based upon examples from the classic and contemporary repertoires.

Prerequisite: English 18.200★ or permission of the Department.

Day division, Winter term: Four hours a week.

*J.D. Campbell*

English 18.202

#### Comedy and Satire

A critical examination of the comic and satiric in English literature through a study of representative plays, novels and short stories. The theory of comedy and satire is examined in relation to the texts: types, techniques and themes.

Prerequisite: Second-year standing.

Not offered 1986-87.

English 18.203

#### Introduction to the Novel in English

A historical and critical study of the novel from its beginnings in the eighteenth century to the present. Twelve to 15 novels are studied.

English 18.203 and 18.303 (no longer offered) may not both be taken for credit.

Prerequisite: A 100-level credit in English.

Not offered 1986-87.



English 18.205

**History of the Language**

A course on the nature and development of the sounds, grammar and spelling of the English language, together with some study of its cultural and stylistic evolution.

Prerequisite: A 100-level credit in English or permission of the Department.

Not offered 1986-87.

English 18.206

**Children's Literature**

A historical and critical study of children's literature. The course introduces students to critical analysis and assessment of a number of acknowledged classics of children's literature. The organization of works studied is generic, with myth, legend, folklore, fantasy, poetry, drama, allegory, fable and fiction being the principal forms to be considered. A detailed reading list is available from the department.

English 18.206 and 18.302 (no longer offered) may not both be taken for credit.

Prerequisite: Second-year standing.

Day and Evening divisions: Three hours a week.

*B.C. Garner, R.B. Lovejoy, A.D. McLay*

English 18.207

**Literature and the Sciences**

A course concentrating on certain points of intersection between literature and science, using texts from various periods and genres.

Prerequisite: Second-year standing.

Not offered 1986-87.

English 18.208

**Myth and Symbol**

A study of myth and its appearance in literature. The course explores the great myths that gave form to man's search for meaning, and that still strike a deep response in the psyche. A wide range of texts is used to demonstrate the nature and vitality of myth in both its non-literary and literary forms.

Prerequisite: Second-year standing.

Day division: Three hours a week.

*T.J. Henighan*

English 18.209

**Greek and Latin Literary Genres**

A study through English translations of the various genres of Greek and Latin literature, especially those which influenced later European writing: epic, drama, the ode, pastoral poetry, satire. Offered in the Department of Classics as Classical Civilization 13.209.

Day division: Lectures two hours a week.

English 18.230

**British Literature from the Renaissance to the Romantics**

A selection of works by major authors, generally including Spenser, Shakespeare, Donne, Milton, Pope, Swift, Coleridge and Wordsworth, is studied intensively. Students are introduced to basic critical vocabulary and to methods of critical analysis. This course should be taken by Major and Honours students in the Second year.

Prerequisite: A 100-level credit in English.

Day and Evening divisions: Lectures/seminar three hours a week.

*Co-ordinator: M. Gunn*

English 18.236

**Shakespeare**

A close study of a selection of Shakespeare's plays; attention is also paid to his environment and his develop-

ment as a dramatist.

Prerequisite: A 100-level credit in English or permission of the Department.

Day and Evening divisions: Three hours a week.

*T.H. Coulson, M. Gunn, C. Haines*

English 18.268

**Forms and Conventions of the Cinema**

This course examines the forms, structures and stylistic conventions of the cinema. Attention is given to the development of a critical idiom suited to the description, analysis and evaluation of film. (Also listed as Film Studies 19.268.)

Prerequisite: Film Studies 19.100 or a 100-level credit in English.

Day division: Three hours lecture and screening, one hour lecture.

English 18.272

**Introduction to American Literature**

An introduction to the major authors and traditions of American literature from its beginnings to the present.

Prerequisite: A 100-level credit in English or permission of the Department.

Day division: Three hours a week.

*J.J. Healy*

English 18.282

**Canadian Literature**

A survey of the development of Canadian literature in English from its nineteenth-century beginnings to the present.

Prerequisite: A 100-level credit in English or permission of the Department.

Day and Evening divisions: Three hours a week.

*Co-ordinator: E.D. Padolsky*

English 18.290★

**Literature of the Self**

A study of the forms, themes and meaning of autobiographical literature. Attention is paid to the history of autobiographical writing and to the autobiography as a social document, but the main focus of the course is on autobiography as part of the modern search for the self.

Prerequisite: Second-year standing.

Day division, Winter term: Three hours a week.

*C. Levenson*

English 18.291

**Poetry Workshop**

A workshop involving regular assignments in writing poetry and practical criticism based on this work. Enrolment is limited. Details may be obtained from the Department.

Prerequisites: A 100-level credit in English and permission of the Department.

Not offered 1986-87.

English 18.292

**Women and Literature**

An exploration of the feminine perspective in literature as well as the changing role of women in society. A theoretical survey of relevant issues provides a general framework for the course; the main focus, however, is on selected literary texts. Both women authors and the feminine role in works of literature and in the society that produced them are studied.

Prerequisite: Second-year standing.

Not offered 1986-87.

English 18.293

**Fiction Workshop**

A workshop involving regular assignments in writing prose fiction and practical criticism based on this work. Enrolment is limited. Details may be obtained from the Department.

Prerequisites: A 100-level credit in English and permission of the Department.

Evening division: Three hours a week.

*T.J. Henighan*

English 18.294

**Drama to the Nineteenth Century**

A study of selected significant plays from the classical to the romantic period of world drama, including classical and Elizabethan tragedy and comedy, Restoration comedy, medieval mystery plays and Japanese Noh drama. A few modern plays by such authors as Ibsen, Brecht, Sartre and Stoppard are used to illustrate the influence of earlier world drama on modern theatre.

English 18.294 and 18.304 (no longer offered) may not both be taken for credit.

Prerequisite: A 100-level credit in English.

Not offered 1986-87.

English 18.295

**Introduction to the English Language**

A course intended particularly as an in-service course for teachers of English and the language arts. The sound system of English in relation to English spelling; English vocabulary, grammar and syntax; stages in the acquisition of English as a first language, especially after age six; roles and uses of English in Canada; standard English pedagogical implications.

Prerequisite: Admission to the Certificate in English Language and Composition program or permission of the Department.

*I.W.V. Pringle*

English 18.296

**The Writer, Literature and Society**

An examination of the roles adopted by the writer in relation to society, either as apologist, social critic, satirist, moralist, visionary or myth-maker. Texts are chosen from a wide variety of historical periods, but the main focus is on the writer in the modern world.

Prerequisite: A 100-level credit in English.

Evening division: Three hours a week.

*R.H. MacDonald*

English 18.297

**Writing: Theory and Practice**

A study of the process of writing in theory and practice. Reading and discussions focus on the nature of the composing process; the development of writing abilities from the elementary years to maturity; the interrelationship between talking and writing; strategies for encouraging growth in writing. In addition to examining recent research findings and pertinent theoretical texts, students engage in the composing process themselves in order to ground the theory and research findings in their own experiences as writers. (Also listed as Linguistics 29.297.)

Prerequisite: Second-year standing or enrolment in the Certificate program in English Language and Composition.

*A. Freedman*

English 18.300

**Literary Criticism from Aristotle to the Present**

Problems and questions in literary criticism.

Prerequisite: English 18.230 or permission of the

Department.

Day division: Three hours a week.

*T.H. Coulson*

English 18.305

**Style, Imagination and Judgment**

An examination of the nature of good and bad writing. The category of imagination as a criterion for judging prose. Conditions favourable to the production of good writing. The cultural effects of bad writing.

Prerequisite: Third-year standing or enrolment in the Certificate program in English Language and Composition.

Evening division: Lecture three hours a week.

*M.I. Cameron*

English 18.312

**Old English**

A study of Old English language and literature, including grammar and phonology, and translation of selections of Old English prose and poetry.

Prerequisite: A 100-level credit in English or permission of the Department.

Day division: Two hours a week.

*M.B. Thompson*

English 18.322

**Chaucer and the Literature of Medieval England**

A study of Chaucer's works and of the English language and literature between the Norman conquest and the fifteenth century.

Prerequisite: English 18.230 or permission of the Department.

Evening division: Lecture/seminar, three hours a week.

*D.J. Wurtele*

English 18.331★

**Spenser**

A study of the works of Spenser, principally *The Faerie Queene*, in the context of his times and in the light of current criticism.

English 18.331★ cannot be taken for credit in addition to 18.327 (no longer offered).

Prerequisite: English 18.230 or permission of the Department.

Day division, Winter term: Seminar two hours a week.

*D.J. Wurtele*

English 18.332

**Renaissance Literature**

A study of the great age of English literature. Poetry and prose from Wyatt and More to Donne and Milton are considered, representing such literary movements as Christian humanism, classicism and metaphysical literature.

Students who have taken English 18.337 and 18.338 (no longer offered) may not also take 18.332 for credit.

Prerequisite: English 18.230 or permission of the Department.

Day division: Lectures three hours a week.

*A. Tilson*

English 18.336★

**Milton**

A study of Milton's poetry and prose in the context of his age and intellectual background and in the light of current criticism.

Prerequisite: English 18.230 or permission of the Department.

Day division, Fall term: Seminar two hours a week.

*L.A. Mann*



English 18.342

**Eighteenth-Century Literature**

Detailed study of authors and movements of the period 1660 to 1780.

Students who have taken English 18.242 (no longer offered) may not also take 18.342 for credit.

Prerequisite: English 18.230 or permission of the Department.

Evening division: Lectures three hours a week.

*T.H. Coulson*

English 18.343

**The Novel from Defoe to Scott**

A study of selected novelists of the eighteenth century and early nineteenth century.

Prerequisite: English 18.230 or permission of the Department.

Day division: Lectures three hours a week.

*J.M. Wilcox*

English 18.348

**Romanticism**

A study of major writers, including Wordsworth, Coleridge, Blake, Byron, Keats and Shelley.

Prerequisite: English 18.230 or permission of the Department.

Day division: Seminar two hours a week.

*A.W. Heidemann, M.B. Thompson*

English 18.351

**Victorian Poetry**

A detailed examination of the poetry of Tennyson, Browning and Arnold, with some attention to related poems of other Victorian authors.

Prerequisite: English 18.230 or permission of the Department.

Not offered 1986-87.

English 18.353

**The Novel from Dickens to Conrad**

A study of the English novel from the High Victorian period of Dickens, Thackeray and Eliot to World War I.

Students who have taken English 18.253 (no longer offered) may not also take 18.353 for credit.

Prerequisite: A 100-level credit in English or permission of the Department.

Day division: Lectures three hours a week.

*R.B. Rutland*

English 18.361

**Twentieth-Century Poetry**

An introduction to the poetry of Great Britain, the United States and Canada in the twentieth century.

Prerequisite: A 100-level credit in English or permission of the Department.

Day division: Lectures three hours a week.

*A.T. Tolley*

English 18.362

**Literature of Modern Ireland**

The English language poetry, drama, and fiction of modern Ireland. The course includes such authors as Yeats, Synge, O'Casey, Shaw, Joyce, Behan, Beckett, Heaney.

Prerequisite: A 100-level credit in English or permission of the Department.

Not offered 1986-87.

English 18.363

**Twentieth-Century British Fiction**

A study of twentieth-century British fiction. The specific authors may vary from year to year. Consult the Department's reading lists.

Prerequisite: A 100-level credit in English or permission of the Department.

Day division: Lectures three hours a week.

*J.R. Morrison*

English 18.364

**Modern Drama**

An examination of the significant trends that have shaped the development of modern drama from Ibsen and Strindberg to such contemporary dramatists as Beckett, Albee and Pinter. Among the movements discussed and illustrated from relevant plays are realism, symbolism, expressionism, epic theatre, surrealism, theatre of cruelty and theatre of the absurd.

Prerequisite: A 100-level credit in English or permission of the Department.

Not offered 1986-87.

English 18.371

**American Poetry**

A study of twentieth-century American poetry to the 1970s. Attention is given to poetic movements and influences.

Prerequisite: English 18.272 or permission of the Department.

Day division: Seminar two hours a week.

*R.L. Hogg*

English 18.373

**American Fiction**

A study of the American novel to the 1970s including Wharton, Dos Passos, Stein, Fitzgerald, Faulkner, Hemingway, Barth, Anais Nin, Nabokov, Kerouac, Ferlinghetti, Pynchon, Styron, Joyce Carol Oates, Hawkes, Vonnegut, Brautigan, and Tom Robbins. Attention is given to fictional theory, movements and influences.

Prerequisite: English 18.272 or a course in the English novel.

Not offered 1986-87.

English 18.381

**Canadian Poetry**

The course concerns itself with major trends and figures from the beginning until our time. It is designed to permit students to gain some familiarity with the whole tradition of English-Canadian poetry with some comparative reference to the poetry of Quebec.

Prerequisite: English 18.282 or permission of the Department.

Day division: Seminar two hours a week.

*R.L. Hogg*

English 18.383

**Canadian Fiction**

A study of selected Canadian novels and the development of Canadian fiction.

Prerequisite: English 18.282 or permission of the Department.

Day division: Lectures three hours a week.

*L.T.R. McDonald*

English 18.387

**Selected Topic in Canadian Literature**

In 1986-87, a study of the treatment of aboriginal people in Canadian literature from the time of contact until the present.

Prerequisite: English 18.282 or permission of the Department.

Day division: Seminar two hours a week.

*H.P. Duchemin*

English 18.390

**The Literature of Existentialism**

A study of the origins, development and principal characteristics of existentialist literature. (Also listed as Arts and Social Sciences 04.390).

Prerequisite: Permission of the Department.

Day division: Lectures two hours a week.

*B.W. Jones*

English 18.394★

**Theatre and Society**

A study of the theatre in its social context: two periods of theatre history are studied to illustrate the relations among elements such as theatrical forms and conventions, theatre buildings, theatre occasions and theatre theories, as they occur within specific social circumstances.

Prerequisite: A 100-level credit in English or permission of the Department.

Day division, Winter term: Lecture three hours a week.

*J.D. Campbell*

English 18.400

**Studies in Literary Theory and Criticism**

A study of a selected topic in literary theory and criticism. The topic in 1986-87 is structuralism and the study of English literature.

Prerequisite: Permission of the Department.

Evening division: Seminar two hours a week.

*R.B. Rutland*

English 18.401★

**Studies in Poetry**

A study of a selected topic in poetry. In 1986-87 the topic is the strategies of the "confessional" lyric and its relationship to earlier Romantic modes of self-revelation.

Prerequisite: Permission of the Department.

Day division, Winter term: Seminar two hours a week.

*C. Levenson*

English 18.403

**Studies in the Novel**

A seminar for the study and discussion of the art of the novel as exemplified by major works of fiction. Study includes varieties of form and pattern, modes of narration, imagery and symbolism, realism, and naturalism.

Prerequisite: Honours students; others by permission of the Department.

Evening division: Seminar two hours a week.

*J.M. Wilcox*

English 18.404★

**Theatre Theory and the Practice of Theatre Criticism**

A seminar in which students study classic texts of theatre theory and apply them to the writing of critiques of selected local theatre productions.

Prerequisite: A course in drama or theatre or permission of the Department.

Not offered 1986-87.

English 18.428★

**Studies in Medieval Literature I**

A study of a selected topic in Medieval literature. In 1986-87 the topic is the work of the *Gawain* poet.

Prerequisite: English 18.322 or permission of the Department.

Day division, Fall term: Seminar two hours a week.

*M. Gunn*

English 18.429★

**Studies in Medieval Literature II**

A study of a selected topic in Medieval literature. In 1986-87 the topic is Malory's *Morte Darthur*.

Prerequisite: English 18.322 or permission of the Department.

Day division, Winter term: Seminar two hours a week.

*M. Gunn*

English 18.432★

**Studies in Renaissance Literature**

A study of a selected topic in Renaissance literature. In 1986-87 the topic is a study of metaphysical poetry.

Prerequisite: English 18.230 or permission of the Department.

Day division, Winter term: Seminar two hours a week.

*C. Levenson*

English 18.434★

**Elizabethan and Jacobean Drama**

A study of dramatic literature and production in the period 1580-1640.

Prerequisite: English 18.230 or permission of the Department.

Evening division, Fall term: Seminar two hours a week.

*T. Nallet*

English 18.436★

**Shakespeare**

A seminar for Honours students, concentrating on critical and scholarly approaches to Shakespeare's work.

Prerequisite: Honours students; others by permission of the Department.

Day division, Fall term: Seminar two hours a week.

*F.B. Gildenhufs*

English 18.447★

**Studies in Restoration, Eighteenth-Century, and Romantic Literature I**

A study of a selected topic in Restoration, Eighteenth-century, and Romantic literature. In 1986-87 the topic is selected plays of the Restoration and Eighteenth century.

Prerequisite: English 18.230 or permission of the Department.

Day division, Winter term: Seminar two hours a week.

*F.B. Gildenhufs*

English 18.448★

**Studies in Restoration, Eighteenth-Century, and Romantic Literature II**

A study of a selected topic in Restoration, Eighteenth-century, and Romantic literature. In 1986-87 the topic is selected novels by Jane Austen.

Prerequisite: English 18.230 or permission of the Department.

Day division, Fall term: Seminar two hours a week.

*R.B. Lovejoy*

English 18.458

**Studies in Victorian Literature**

A study of a selected topic in Victorian literature. In 1986-87 the topic is the shaping of the English nineteenth-century mind: the influences of Romantic critics such as Burke and Coleridge, and Victorian intellectuals such as Carlyle, Mill, Newman, Ruskin, Arnold and Morris.

Prerequisite: English 18.230 or permission of the Department.



Day division: Seminar two hours a week.  
*T. Middlebro'*

English 18.467★

**Studies in Twentieth-Century British Literature I**

A study of a selected topic in British literature of the twentieth century. In 1986-87 the topic is the development of the modern short story by a variety of authors.

Prerequisite: English 18.230 or permission of the Department.

Evening division, Fall term: Seminar two hours a week.

*A.M. Beattie*

English 18.468★

**Studies in Twentieth-Century British Literature II**

A study of a selected topic in British literature of the twentieth century. The topic in 1986-87 is form and structure of the modern novel, with particular reference to James, Conrad, Joyce and Woolf.

Prerequisite: English 18.230 or permission of the Department.

Evening division, Winter term: Seminar two hours a week.

*A.M. Beattie*

English 18.478★

**Studies in American Literature I**

A study of a selected topic in American literature. In 1986-87 the topic is American novelists at home and in Europe in the 1920s and 1930s, including Faulkner, Hemingway, Fitzgerald, Stein, H.D., Barnes, Wharton and Dos Passos.

Prerequisite: English 18.272 or permission of the Department.

Day division, Fall term: Seminar two hours a week.

*J.R. Morrison*

English 18.479★

**Studies in American Literature II**

A study of a selected topic in American literature. In 1986-87 the topic is American novelists and their meta-fictional concerns in the 1960s and 1970s, including Hawkes, Barth, Styron, Oates, Pynchon, Nabokov, Tom Robbins, Sorretino, Vonnegut and Barthelme.

Prerequisite: English 18.272 or permission of the Department.

Day division, Winter term: Seminar two hours a week.

*J.R. Morrison*

English 18.483

**Studies in the Literature of Quebec and English Canada**

A study of selected works of the literature of Quebec of the nineteenth and twentieth centuries. English-language writing of Quebec and French Canadian literature in translation, including fiction, poetry and criticism, are studied.

Prerequisites: English 18.282 or 18.383 and permission of the Department.

Day division: Seminar two hours a week.

*K.M. O'Donnell*

English 18.486★

**Studies in Canadian Literature I**

A study of a selected topic in Canadian literature.

Prerequisite: English 18.282 or permission of the Department

Not offered 1986-87.

English 18.487★

**Studies in Canadian Literature II**

A study of a selected topic in Canadian literature.

Prerequisite: English 18.282 or permission of the

Department

Not offered 1986-87.

English 18.495

**Research Seminar in English and Education**

Investigation of recent developments in language study, rhetoric and composition, and studies of the literary imagination and their implications for the teaching of English. (Also listed as Linguistics 29.495.)

Prerequisite: English 18.295 and 18.297 or permission of the Department.

Day division: Seminar two hours a week.

*I.W.V. Pringle*

English 18.496★

**Studies in African or Caribbean Literature**

A study of a selected topic in African or Caribbean literature. In 1986-87 the topic is Literature and the Pressures of History in Plantation America: an introduction to the literature of the Caribbean.

Prerequisite: Permission of the Department.

Day division, Fall term: Seminar two hours a week

*J.J. Healy*

English 18.497★

**Studies in Australian and New Zealand Literature or Indian Literature in English**

A study of a selected topic in Australian and New Zealand literature or Indian literature in English. In 1986-87 the topic is Convicts, Legends, Landscapes, Aborigines: Australian literature from the 1890s to the present.

Prerequisite: Permission of the Department.

Day division, Winter term: Seminar two hours a week.

*J.J. Healy*

English 18.498

**Independent Study**

A course for independent research and writing, under the supervision of a member of the Department, open to students in the Fourth year of Honours with a B+ standing in their English courses. An essay of approximately 10,000 words is the usual written assignment. A written request, outlining the project, with the approval of the supervisor, must be submitted to the co-ordinator by the last day for course changes.

Note: This course may be used to fulfil one of the seminar requirements for the Honours degree, but it cannot fulfil an area requirement or substitute for English 18.230. For students in Combined Honours, however, it is considered to be the equivalent of an Honours Essay.

English 18.499

**Seminar**

For Honours students in the Fourth year and others by permission. The course considers the role of English studies in a complex system of higher education.

Not offered 1986-87.

# English as a Second Language

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## Officers of Instruction

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See also Centre for Applied Language Studies, p. 401.

*Co-ordinator*  
Devon Woods

*Assistant Professor*  
Devon Woods

*Instructors*  
Patricia Currie  
Trudy O'Brien

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## General Information

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The courses are designed to meet the needs of students who are qualified for admission to any Faculty but whose native language is not English, and whose scores on the Carleton test of English as a Second Language (ESL) or other tests recognized by the University indicate they would encounter serious difficulties in a full academic program. No student who has native or native-like command of English is permitted to take any of these courses.

The aim of these courses is to train students for university work. The focus for the Intermediate (ESL 21.150) and Advanced English (ESL 21.190), therefore, is on listening to lectures and extended discourse, note-taking, writing essays and papers and participating in group seminar work. The focus in Advanced Writing (ESL 21.196★) is specifically related to developing skill in preparing, writing, revising and editing papers and reports for academic and professional purposes.

Placement in these courses is determined by the Carleton test of ESL. No challenges for credit can be made for credit in ESL.

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## Courses Offered

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English as a Second Language 21.150

### **Intermediate English**

For students who are familiar with the basic grammatical structures of English, and who have some oral fluency. This course helps to develop skills in understanding and producing appropriate English in an academic setting. Work is done on effective reading, listening to lectures, note-taking, researching and writing essays and reports, and participating in group seminars.

Day division, Fall and Winter terms: Six hours a week (one term).

English as a Second Language 21.190

### **Advanced English**

For students with fairly good command of English who need further language support in the area of academic studies. There is a focus on increasing the effectiveness and speed of reading and on the understanding of complex oral and written texts. Extensive work is done on the developing of research skills, on the organization and writing of essays, and on the preparation and presentation of oral reports.

Day division, Fall and Winter terms: Six hours a week (one term).

English as a Second Language 21.196★

### **Advanced Writing for English as a Second Language**

For advanced second-language students who need the ability to write academic papers in English, and who wish to develop effective methods for doing so. This course focusses on strategies for generating ideas; combining, organizing, and structuring information from several sources; and expressing ideas effectively, clearly and grammatically.

Day division, Fall and Winter terms: Three hours a week (one term).



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## Officers of Instruction

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### *Chair*

George McKnight

### *Professor*

Peter Harcourt

### *Associate Professors*

Christopher G. Faulkner

Patrick MacFadden (*Journalism*)

George McKnight

### *Assistant Professors*

Mark Langer

Zuzana Pick

William Straw

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## General Information

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Film Studies is an academic discipline concerned with the history, criticism, theory and practice of the cinema both as an art form and as a documentary record of our time. The cinema is a source of pleasure and knowledge, and its study should form a part of one's cultural education. The program will enable the student to develop a critical faculty appropriate to intelligent understanding of the cinema by approaching its study as a scholarly activity that rewards systematic research, analysis and exposition.

In designing the curriculum, the Department has sought both integration and progressive development. A careful curricular development will ensure intellectual growth through either a Major or Honours program devoted to the study of film. While the courses have been articulated together, they remain distinct enough to permit a number of related intellectual approaches to the study of film, and to enable those approaches to be related to work in other disciplines.

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## Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all departmental regulations and requirements as set out below.

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## Major Programs

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### **Majors**

All students who elect Film Studies as a Major subject must have their program approved by a member of the Department of Film Studies. The Major in Film Studies consists of a minimum of six credits in Film Studies, as follows:

1. Film Studies 19.100;
2. Film Studies 19.200;
3. two credits in Film Studies at the 300 level, one of which must be either Film Studies 19.300 or 19.350;
4. two additional credits in Film Studies beyond the 100 level.

### **Combined Majors**

Combined Major programs may be arranged with other departments in the Faculties of Arts or Social Sciences. Both departments must approve a Combined Major program.

A Combined Major in Film Studies and another subject includes at least five credits in Film Studies, as follows:

1. Film Studies 19.100;
2. Film Studies 19.200;
3. two credits in Film Studies at the 300 level;
4. one additional credit in Film Studies beyond the 100 level.

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## Honours Programs

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### **Honours**

All students who meet the general University Honours requirements, and who have a grade-point average of at least 6.0 in Film Studies, will be admitted to, and permitted to continue in, the Honours program. Other applicants will be given individual consideration on application to the Department. Honours students must have their program approved by a departmental adviser.

Honours in Film Studies consists of a minimum of nine credits in Film Studies as follows:

1. Film Studies 19.100;
2. Film Studies 19.200;
3. Film Studies 19.300 and 19.350;
4. two credits in Film Studies at the 400 level;
5. three additional credits in Film Studies beyond the 100 level.

### **Combined Honours**

Combined Honours programs may be arranged through the departmental adviser. Both departments must approve a Combined Honours program. A Combined Honours program in Film Studies and another subject includes at least seven credits in Film Studies, as follows:

1. Film Studies 19.100;
2. Film Studies 19.200;
3. Film Studies 19.300 or 19.350;
4. one credit in Film Studies at the 400 level;
5. three additional credits in Film Studies beyond the First year, one of which must be at the 300 level or beyond.

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## Courses Offered

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### **Film Studies 19.100**

#### **Introduction to Film Studies**

An introduction to the study of film. Consideration is given to the nature of the medium, audience perception, historical and technical development of the cinema, and problems of theory and critical method. The course focuses on four specific areas: (a) style and technique; (b) a period in film history; (c) the film maker; and (d) film genres.

Day and Evening divisions: Lecture and screening three hours a week, discussion one hour a week.

Film Studies 19.200

**Film Theory, Aesthetics and Criticism**

This course examines basic questions of film theory, aesthetics and criticism. Emphasis is given to developing critical skills through a close analysis of films and theoretical writings.

Prerequisite: Film Studies 19.100 or permission of the Department.

Day division: Lecture and screening three hours a week, seminar one hour a week.

Film Studies 19.211★

**The Film Industry**

This course examines the organization of the production, distribution and exhibition practices of various film industries. The topic for 1986-87 is U.S.A., Britain, Canada, Australia.

Prerequisite: Film Studies 19.100 or permission of the Department.

Evening division, Winter Term: Lecture and screening three hours a week, lecture one hour a week.

Film Studies 19.215

**The Documentary**

This course examines the work of individual film makers, of documentary styles and of organizations and institutions in the context of the history of documentary film making. Non-fiction films other than documentaries may be considered. (Also listed as Journalism 28.215.)

Prerequisite: Film Studies 19.100 or permission of the Department.

Day division: Lecture and screening three hours a week, lecture one hour a week.

Film Studies 19.221★ (19.220)

**National Cinema**

This course examines the film production of specific countries in order to determine the themes, the styles, and the character of a national cinema. The topic for 1986-87 is France.

Prerequisite: Film Studies 19.100.

Day division, Winter term: Lecture and screening three hours a week, lecture one hour a week.

Film Studies 19.241★ (19.240)

**The Film Maker**

A detailed study of the themes, the characteristic style, development and influence of one or more directors.

Evening division, Fall term: Hitchcock and Chaplin.

Day division, Winter term: Women film makers.

Prerequisite: Film Studies 19.100.

Evening division, Fall term and Day division, Winter term: Lecture and screening three hours a week, lecture one hour a week.

Film Studies 19.261★

**Film Genres**

This course examines questions of generic form, drawing examples from the world cinema. The topic for 1986-87 is Melodrama.

Prerequisite: Film Studies 19.100.

Day division, Fall term: Lecture and screening three hours a week, lecture one hour a week.

Film Studies 19.268

**Forms and Conventions of the Cinema**

This course examines the forms, structures and stylistic conventions of the cinema. Attention is given to the development of a critical idiom suited to the description, analysis, and evaluation of film. (Also listed as English 18.268.)

Prerequisite: Film Studies 19.100 or a First-year course in English.

Day division: Lecture and screening three hours a week, seminar one hour a week.

Film Studies 19.300

**Aspects of Film History**

A study of the major histories of film. Special attention is paid to the historiographical assumptions, the critical judgments and the cultural values that have affected past and present evaluations of the cinema.

Prerequisite: A full credit or its equivalent in Film Studies at the 200 level, or permission of the Department.

Day division: Lecture and screening three hours a week, lecture one hour a week.

Film Studies 19.315★

**Questions of Documentary Practice**

This course examines the theoretical implications of documentary practice.

Prerequisite: A full credit or its equivalent in Film Studies at the 200 level, or permission of the Department.

Day division, Fall term: Lecture and screening two hours a week, lecture one hour a week.

Film Studies 19.325 (19.228)

**Studies in American Cinema**

Cultural, social and organizational studies of the American cinema. The course focuses on various features of this cinema such as the major production companies, the star system, genres, film style, and the role of the individual film maker.

Exclusions: Students already holding credit for Film Studies 19.228 (no longer offered).

Prerequisite: A full credit or its equivalent in Film Studies at the 200 level, or permission of the Department.

Not offered 1986-87.

Film Studies 19.328

**The Canadian Cinema**

A critical examination of Canadian film, both anglophone and francophone. The course relates the Canadian cinema to other aspects of Canadian culture and examines the conditions that have affected film making in this country.

Prerequisite: Third-year standing or permission of the Department.

Day division: Screening three hours a week, lecture two hours a week.

Film Studies 19.333

**Film and Society**

An examination of film in relation to social and intellectual developments of the twentieth century. The ways in which the cinema has both shaped and been shaped by some of these developments are considered. (Also listed as Journalism 28.333.)

Prerequisite: Film Studies 19.100 or Third-year standing.

Day division: Lecture and screening three hours a week, lecture one hour a week.

Film Studies 19.350

**Film Theory**

A detailed study of major film theories and their relationship to critical practice.

Precludes additional credit for Film Studies 19.368 (no longer offered.)

Prerequisite: A full credit or its equivalent in Film Studies at the 200 level, or permission of the Department.

Screening three hours a week, seminar two hours a week.



## Film Studies 19.371★

**Topics in Experimental Film, Video and Animation**

A study of selected topics in experimental film, video or animation. The topics to be studied may vary from year to year and will be announced in advance. The topic for 1986-87 is Animation: History and Aesthetics.

Prerequisite: A full credit or its equivalent in Film Studies at the 200 level, or permission of the Department.

Day division, Winter term: Lecture and screening three hours, lecture one hour a week.

## Film Studies 19.400

**Modes of Historical Research**

This course develops the skills necessary for individual research in the field of film history.

Prerequisite: Film Studies 19.300 or permission of the Department.

Not offered 1986-87.

## Film Studies 19.421★

**Selected Topics in National Cinemas**

A study of a selected topic in national cinema. The topic for 1986-87 is Britain.

Prerequisite: Fourth-year Honours standing in Film Studies or permission of the Department.

Day division, Fall term: Screening three hours a week, seminar two hours a week.

## Film Studies 19.441★

**Selected Topics in Film Authorship**

A study of questions of authorship in the cinema concentrating on one or more film makers. The topic for 1986-87 is the Cinema of Werner Herzog.

Prerequisite: Fourth-year Honours standing in Film Studies or permission of the Department.

Day division, Winter term: Screening three hours a week, seminar two hours a week.

## Film Studies 19.451★

**Selected Topics in Film Theory**

A study of a selected topic in film theory.

Prerequisite: Film Studies 19.350 or permission of the Department.

Not offered 1986-87.

## Film Studies 19.461★

**Studies in Film Analysis**

An analysis of individual films in relation to questions of critical practice.

Prerequisite: Fourth-year Honours standing in Film Studies or permission of the Department.

Day division, Winter term: Screening three hours a week, seminar two hours a week.

## Film Studies 19.491★ (19.490)

**Special Topic**

This course offers selected topics in film studies not ordinarily available in the regular course program. The choice of topic or topics will vary at least every two years and will be announced well in advance of the registration period. The topic for 1986-87 is Modernism, Post-modernism and the Cinema.

Prerequisite: Fourth-year standing in Film Studies, or permission of the Department.

Day division, Fall term: Screening three hours a week, seminar two hours a week.

## Film Studies 19.495

**Independent Study**

A research course for selected students who wish to study a topic of particular interest. The course may be

taken only once and is available to students in the Fourth year only. Projects must be organized on an individual basis with a member of the Film Studies Department and approved by the Chair. A written request outlining the project must be submitted by the last day for course changes. An essay of 6,000 to 8,000 words is the usual assignment. Instead of a research paper, the Department may accept projects such as a short 16mm film or video production, or a screenplay.

Prerequisite: Permission of the Department and Fourth-year Honours standing in Film Studies.

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**Graduate Study**

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While Film Studies does not offer a graduate program, a graduate level course, Canadian Cinema (Film Studies 19.528), is taught by a member of the Department through the Institute of Canadian Studies. Further information is available in the Calendar of the Faculty of Graduate Studies and Research.

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**French Language Instruction**

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A section of French 20.108, an advanced language course for non-French Majors, has been designed especially for film studies students. Films and video tapes made in France and Quebec will be available for study. Further information is available from the course co-ordinator or from the Department of Film Studies.

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**Summer and Evening Study**

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Film Studies 19.100 will be offered every year during Summer Evening and Fall/Winter Evening divisions. In addition, a different upper level course will be offered each year during the Fall/Winter Evening division. It may not be possible, however, to obtain a degree in Film Studies through the Summer or Evening divisions alone.

# Department of French

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## Officers of Instruction

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### *Chairman*

S. Robinson

### *Assistant Chairman*

J. Kealey

### *Supervisor of Major Studies*

E.F. Kaye

### *Supervisor of Honours Studies*

E.N. Zimmerman

### *Supervisor of Graduate Studies*

R. Galliani

### *Professors*

H.P. Clive

O. Condemine

A. Elbaz

C.P. Fleischauer

R. Galliani

E.F. Kaye

P. Laurette

S. Sarkany

P. van Rутten

### *Associate Professors*

F. Cousin

M. Gaulin

A. Halsall

J. Miquet

S. Robinson

P. Smart

D.W. Smith

J.-J. van Vlasselaer

E. Voldeng

E.N. Zimmerman

### *Assistant Professors*

J. Kealey

G. Riser

### *Senior Lecturer*

W.M. Fraser

### *Instructors*

V. Basseville

B. Burke

C. Cordier-Gauthier

D. Rosse

A. Ruprecht

### *Adjunct Professor*

J.S. Tassie

### *Sessional Lecturers*

C. Beaudoin

R. Benoit

F. Carbon

M. Clive

S. Dupont

L. Dupuis

S. Guberman

J. Laverdure

R. Maisonneuve

A. Massé

M. Moriarty

S. Ouellet

M.-A. Rousseau-Beecher

N. Sarma

B. Smith

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## General Information

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Carleton University is situated in a bilingual community, and students are encouraged to take advantage of the multiple opportunities for practical appreciation of the language. Radio, television, cinema, stage, the press and everyday conversation are at hand to supplement academic programs. The Department of French has a special housing service, which allows students to live with francophone families. Classes are conducted in French unless otherwise indicated. The Department also has at its disposal a fully equipped language laboratory.

English-speaking students who wish to graduate with a Major or an Honours standing in French are normally required to pass an oral examination testing their proficiency in spoken French. The examination takes place at the beginning of their final year, with the option of repeating it at the end of that year.

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## Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all departmental regulations and requirements as set out below.

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## Student Exchanges

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The Department of French has two student exchanges, one with the *Université du Québec* in Trois-Rivières, and the other with the *Université de Savoie* in Chambéry, France. These exchanges make it possible for a maximum of six English-speaking Honours students (three of whom go to Québec and three to France) to spend their Third year in an immersion milieu. Financial assistance is also available. For more information please consult the Chairman of the Department.

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## First Year Programs: Honours and Majors

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Students must acquire one credit in language and one credit in literature as follows:

### Language requirement (one credit)

A student wishing to do Major or Honours work in French takes French 20.111 (for Anglophones) or 20.112 (for Francophones).

### Literature requirement (one credit)

The student also takes one of the following: French 20.161, 20.162 or 20.163.

### *Note:*

Honours students intending to choose the language-linguistics concentration would be well advised to take the required course Linguistics 29.100 during their First year.



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## Major Programs

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### 1. Major in French

The following program will help students to consolidate their knowledge of French grammar and to gain a comprehensive view of various aspects of French and French-Canadian literature.

The program consists of four credits beyond the common First year.

In the Second year students normally take French 20.211 (for Anglophones) or 20.212 (for Francophones) and two half credits in literature chosen from the series French 20.261★ to 20.268★.

In the Third year students normally take French 20.312, and one literature credit chosen from the series French 20.361 to 20.381 or exceptionally and only with permission, 20.461 to 20.481.

Students should note that at least one of the literature credits must be obtained in a course or courses with a French content, and at least one in a course or courses with a French-Canadian content. The literature credit taken in First year can be counted in this context.

### 2. Combined Major

Combined Major programs are available in French and other modern or classical languages, linguistics, or with another discipline in the humanities or social sciences.

The program consists of three credits beyond the common First year.

In the Second year students normally take French 20.211 (for Anglophones) or 20.212 (for Francophones) and two half credits in literature chosen from the series French 20.261★ to 20.268★.

In the Third year students normally take either French 20.312 or a literature credit chosen from the series French 20.361 to 20.381 or, exceptionally and only with permission, French 20.461 to 20.481.

Students should note that at least one of the credits in literature must be in a course or courses with a French content, and at least one in a course or courses with a French-Canadian content. The literature credit taken in First year can be counted in this context.

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## Honours Programs

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Several Honours programs are available. Course patterns are designed to assure a balanced appreciation of French and French-Canadian literature, with competence in oral and written expression in the French language. Interested candidates will note the general regulations governing Honours on pp. 88-89.

### Honours in French

This program is particularly suitable for students intending to pursue graduate studies in the field of romance languages, literature and related fields.

Students in the Honours program must declare their concentration in the Second year. There are two areas of concentration in the French Honours program:

#### Concentration A:

This program consists of six credits in literature and two credits in French language and linguistics beyond the common First year. Two credits are also taken in one language other than French or English. Students who already have the knowledge of a third language and can furnish appropriate proof may be exempted, in whole or in part, from this requirement.

The two credits in French language and linguistics are chosen from French 20.211 (for Anglophones), 20.212 (for Francophones), French 20.231 to 20.233★, 20.312, 20.331 to 20.334★, 20.431 to 20.435, with at least one credit at the 300/400 level.

The six credits in literature are normally chosen as follows:

*Second Year:* four half credits from the series French 20.261★ to 20.268★;

*Third Year:* two credits from the series French 20.361 to 20.381;

*Fourth Year:* two credits from French 20.434★ and the series 20.461 to 20.481.

Students should note that two of the literature credits must be obtained in courses with a French content, and two in courses with a French-Canadian content. The literature credit taken in First year can be counted in this context.

#### Concentration B:

This program consists of six credits in French language and linguistics and two credits in literature beyond the common First year. Students are furthermore required to take Linguistics 29.100 and must obtain one credit in a language other than French or English. Students who already have the knowledge of a third language and can furnish appropriate proof may be exempted from the language credit requirement.

The two credits in literature are selected as follows: two half credits chosen from the series French 20.261★ to 20.268★; one credit chosen from the series French 20.361 to 20.381 or 20.461 to 20.481.

The six credits in French language and linguistics are normally taken as follows:

*Second Year:* French 20.211 (for Anglophones) or 20.212 (for Francophones), French 20.232★ and a course chosen from French 20.231, 20.233★, 20.331 to 20.334★;

*Third Year:* two credits from the series French 20.312 to 20.334★;

*Fourth Year:* two credits chosen from French 20.431 to 20.435.

Students should note that one of the literature credits must be obtained in a course or courses with a French content, and one in a course or courses with a French-Canadian content. The literature credit taken in First year can be counted in this context.

#### Combined Honours

Combined Honours programs are available in French and English, German, History, Latin, Linguistics, Political Science, Russian or Spanish, and with other departments by arrangement.

The Honours programs combining two languages prepare the student either for graduate work or for the Ontario College of Education courses leading to the Interim High School Assistant's Certificate Type A, and

must be planned in close consultation with the departments concerned. The combined programs with History or Political Science are suited for various kinds of public careers.

Two areas of concentration have been created in the Combined Honours program:

#### **Concentration C:**

This program consists of four credits in literature and one credit in French language and linguistics beyond the common First year.

The one credit in French language and linguistics is chosen from French 20.211 (for Anglophones), 20.212 (for Francophones), French 20.231 to 20.233★.

The four credits in literature are normally chosen as follows:

*Second Year:* two half credits from the series French 20.261★ to 20.268★;

*Third Year:* one credit from the series French 20.361 to 20.381;

*Fourth Year:* two credits from French 20.434★ and the series French 20.461 to 20.481.

Students should note that at least one and a half of the literature credits must be obtained in courses with a French content, and at least one and a half in courses with a French-Canadian content. The literature credit taken in First year can be counted in this context.

#### **Concentration D:**

This program consists of four credits in French language and linguistics and one credit in literature beyond the common First year. One credit is also taken in Linguistics 29.100.

The one credit in literature consists of two half credits from the series French 20.261★ to 20.268★ or, with permission, a credit chosen from the series French 20.361 to 20.381, or from French 20.461 to 20.481, or the course French 20.434★.

The four credits in French language and linguistics are normally chosen as follows:

*Second Year:* French 20.211 (for Anglophones) or 20.212 (for Francophones);

*Third Year:* one credit from the series French 20.312 to 20.334★;

*Fourth Year:* two credits from the series French 20.431 to 20.435.

Students should note that at least one half credit in literature must be obtained in a course with a French content, and at least one half credit in a course with a French-Canadian content. The literature credit taken in First year can be counted in this context.

#### **Combined Honours in French and Journalism for the B.J. Degree**

The course requirements are as follows:

1. One of French 20.108, 20.110, 20.111 or 20.112;  
One of French 20.161, 20.162 or 20.163;  
French 20.210;  
One credit from the series French 20.261★ to 20.268★;  
French 20.310;  
Two further French credits at the 400 level.
2. Journalism 28.100, 28.101★, 28.200, 28.220, 28.320, 28.351★, 28.421, 28.498. *Note:* Journalism 28.320 is a

two-credit course.

3. An approved credit in Canadian history.

4. Approved options to make up a program total of 21 credits.

Students should also consult the School of Journalism.

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#### **Certificate in French Language Studies**

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This is a six-credit undergraduate certificate designed for part-time students wishing to perfect their spoken and written French. Candidates for the certificate are also encouraged to investigate undergraduate degree programs offered by the University. Courses taken for the certificate are normally creditable towards a Bachelor of Arts degree. Such a degree program will normally require that at least five of the credits required for a Bachelor of Arts degree be completed after the awarding of the certificate.

#### **Admission Requirements**

1. Senior matriculation with a 60 percent overall average, or mature matriculation; and
2. Facility in French to the completion of French 20.102. Candidates lacking this prerequisite will be expected to complete French 20.102 or equivalent before entering the program. Candidates already fluent in French to the level of French 20.111 or 20.112 will be required to take three credits beyond the 200 level. Candidates for the certificate program will be required to take French placement upon entry.

#### **Course Requirements**

The following courses or combinations of courses are required.

For candidates with the normal prerequisite:

1. French 20.111 or 20.112;
2. French 20.211 or 20.212;
3. French 20.231;
4. French 20.232★ and 20.233★;
5. French 20.312 or 20.332 or 20.333★ and 20.334★;
6. One credit from French 20.331, 20.431, 20.432★ or 20.433★.

For candidates with knowledge of French to the level of French 20.111:

1. French 20.211 or 20.212;
2. French 20.231;
3. French 20.232★ and 20.233★;
4. One of French 20.312, 20.332, or 20.333★ and 20.334★;
5. French 20.331 or 20.431;
6. French 20.432★ and 20.433★.

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#### **Graduate Program**

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The Department offers studies leading to the M.A. degree. The Department offers a substantial number of courses in a wide variety of subjects. For further information



please consult the Graduate Studies and Research Calendar.

## Courses Offered

### French Placement for Language Students

Students who have not previously taken a language course in the Department and who wish to enrol in French 20.100, 20.101, 20.102, 20.103, 20.106★, 20.107, 20.108, 20.109, 20.110 must consult the Department for French Placement.

The French Department offers French 20.110, 20.210 and 20.310 for Journalism students.

#### Note:

Students desiring a First-year French credit to satisfy the language requirement of their department or school should consult that department or school as to the acceptability of French 20.100, 20.101, 20.102, 20.103, 20.106★, 20.108, 20.110.

### French 20.100

#### Elementary French

This course is designed for beginners in the language. Classes use audio-visual methods and emphasis is given to the spoken language. Compulsory attendance for both classes and laboratory work. The credit gained from this course will not count as part of the specific requirements for a Major or Honours degree in French. No auditors. Limited enrolment per section.

No supplemental or grade-raising examinations.

Registration through French Placement.

Day and Evening divisions: Five hours a week.

*V. Basseville and members of the Department.*

### French 20.101

#### Introductory Immersion French (two credits)

An intensive course designed for students with little or no previous knowledge of French, and combining the subject matter covered in French 20.100 and 20.102. The approach is largely audio-visual, with progressive introduction of written work. Extra-curricular activities will be organized outside of regular class hours. The credits gained from this course will not count as part of the specific requirements for a Major or Honours degree in French. Offered only in the Day division of the Summer session. Compulsory attendance at all classes and participation in all activities. No single credit given. No supplemental or grade-raising examinations. Enrolment limited to 20 students per section.

Exclusions: Students already holding credit for, or taking French 20.100, 20.102 or 20.103 are ineligible for this course. No auditors.

Registration through French Placement.

### French 20.102

#### Intermediate French (A)

An audio-visual course providing intensive practice in all aspects of oral expression and comprehension. Attention is also devoted to written expression and comprehension. Compulsory attendance for both classes and laboratory work. The credit gained from this course will not count as part of the specific requirements for a Major or Honours degree in French. No auditors. Limited enrolment per section. No supplemental or grade-raising examinations.

Prerequisite: French 20.100 or French Placement.

Day and Evening divisions: Three hours a week, plus laboratory assignments.

*C. Cordier-Gauthier and members of the Department.*

### French 20.103

#### Intermediate French (B)

Review of basic grammar, oral and written exercises, contemporary reading selections. Compulsory attendance for both classes and laboratory work. The credit gained from this course will not count as part of the specific requirements for a Major or Honours degree in French. No auditors.

Prerequisite: French 20.100 or French Placement.

Day division: Three hours a week, plus laboratory assignments.

*A. Halsall*

### French 20.106★

#### Reading French

This course, given in English, is designed to enable specialists from other departments in the humanities, social sciences and sciences to read technical texts in French with reasonable ease. The goal is comprehension of the written word only. The course involves basic French grammar, the reading of selected material from various fields, and an individual assignment in the student's specialization. The course is open to beginners. Registration by permission of the department. The half credit gained from this course will not count as part of the specific requirements for a Major or Honours degree in French. No auditors.

Day division: One and a half hours a week, throughout the year.

*B. Burke and members of the Department.*

### French 20.107 (two credits)

#### Intermediate Immersion French (two credits)

A course in the Summer Language Program designed for students with previous knowledge of French, and combining the subject matter covered in French 20.102 and 20.108. The approach is largely audio-visual and audio-oral, with some written work. Extra-curricular activities are organized outside regular class hours. The credits gained from this course will not count as part of the specific requirements for a Major or Honours degree in French. Offered only in the Day division of the Summer session. Compulsory attendance at all classes and participation in all activities. No single credit given. No supplemental or grade-raising examinations. Enrolment limited to 20 students per section.

Exclusions: Students already holding credit for, or taking French 20.102, 20.103, or 20.108 are ineligible for this course. No auditors.

Prerequisite: French 20.100 or French Placement before registration.

### French 20.108

#### Advanced French for Non-Majors

Intensive study of the French language for students from other departments, based on audio-oral principles. Emphasis is placed on oral comprehension and expression, without omitting the written aspects of the language. The student is encouraged to speak French. Compulsory attendance at both classes and laboratory. No auditors. Limited enrolment per section. No supplemental or grade-raising examinations.

Prerequisite: French 20.102 or 20.103, or French Placement.

Day and Evening divisions: Three hours a week plus laboratory assignments.

*J.-J. van Vlasselaer and members of the Department.*

French 20.109 (two credits)

**Advanced Immersion French (two credits)**

A course in the Summer Language Program combining the subject matter of two advanced-level courses, French 20.108 and 20.111, for the development of oral proficiency as well as written and grammatical expression. Extra-curricular activities are organized outside regular class hours. Only one of the credits gained from this course will count as part of the specific requirements for a Major or Honours in French. Offered only in the Day division of the Summer session. Compulsory attendance at all classes and participation in all activities; no supplemental or grade-raising examinations. Enrolment limited to 20 students per section. No auditors.

Exclusions: Students already holding credit for, or taking French 20.108, 20.111 or 20.112 are ineligible for this course.

Prerequisite: French 20.101, 20.102, 20.103 or French Placement before registration.

French 20.110

**Advanced French for Journalism Students**

Intensive study of the French language for students in journalism. The course is based on audio-oral methods, with emphasis on oral comprehension and expression. Study of the French press: oral reports and written assignments. Compulsory attendance for classes. No auditors. Limited enrolment per section. No supplemental or grade-raising examinations.

Prerequisite: French 20.102 or 20.103 or French Placement.

Day division: Three hours a week plus laboratory assignments.

*B. Burke and members of the Department.*

French 20.111

**Advanced French (A)**

Intensive study of the French language, both spoken and written, with particular attention to the vocabulary, syntax and the various levels of speech: oral reports and written assignments. This course is particularly designed for Anglophone students intending to specialize in French, but it is also open to all those students who already have a good grounding in the language. Compulsory attendance for classes. No auditors.

Prerequisite: French 20.102 or 20.103, or equivalent.

Day and Evening divisions: Two one-and-a-half-hour or three one-hour lectures a week plus laboratory assignments.

*P. Clive and members of the Department.*

French 20.112

**Advanced French (B)**

Comprehensive study of modern grammar. Acquisition of an extensive vocabulary and variety of idioms. Grammatical study of a selection of texts, both prose and poetry. Exercises in writing short essays. This course is particularly designed for Francophone students intending to specialize in French but it is also open to those students from other departments who possess the necessary proficiency. Compulsory attendance for classes. No auditors.

Day and Evening divisions: Two one-and-a-half-hour lectures a week.

*A. Elbaz, E.F. Kaye*

French 20.151

**French-Canadian Literature**

A course for students who do not intend to select French as a Major or Honours subject. Its purpose is to present the student with a survey of French-Canadian literature

with emphasis on contemporary authors. Students are encouraged to use the French language for self-expression but need not do so. English may occasionally be used by the instructor.

Not offered 1986-87.

French 20.152

**French Literature**

A course for students who do not intend to select French as a Major or Honours subject. Its purpose is to present the student with a survey of French literature, with emphasis on contemporary authors. Students are encouraged to use the French language for self-expression but need not do so. English may occasionally be used by the instructor.

Not offered 1986-87.

French 20.161

**Introduction to Literature: French Texts from the Seventeenth to the Nineteenth Century**

This course introduces the student to a certain number of general views on literature with particular attention to the following: the basic elements of a literary work (characters, story, plot, subjects, themes), the problems of interpretation, the intentions of the author and the perception of the reader, the work in its various contexts: biographical, literary, sociological; the formal aspects typical of certain genres, particularly the drama and poetry. The texts illustrating these aspects in French literature are selected within the period from Molière (seventeenth century) to Verlaine (nineteenth century).

Prerequisite: Ontario Grade 13 French, French 20.101, 20.102, 20.103 or equivalent.

Day division: Three hours a week.

*E.F. Kaye*

French 20.162

**Introduction to Literature: French Texts from the End of the Nineteenth Century to the Present**

This course introduces the student to a certain number of general views on literature with particular attention to the following: the basic elements of a literary work (characters, story, plot, subjects, themes), the problems of interpretation, the intentions of the author and the perception of the reader, the work in its various contexts: biographical, literary, sociological; the formal aspects typical of certain genres, particularly the drama and poetry. The texts illustrating these aspects in French literature are selected within the period from Zola (nineteenth century) to the present day. Students taking this course will not be allowed to count French 20.266★ as part of the specific requirements for a Major or Honours degree in French.

Prerequisite: Ontario Grade 13 French, French 20.101, 20.102, 20.103 or equivalent.

Day division: Three hours a week.

*E.N. Zimmerman*

French 20.163

**Introduction to Literature: French-Canadian Texts from the End of the Nineteenth Century to the Present**

This course introduces the student to a certain number of general views on literature with particular attention to the following: the basic elements of a literary work (characters, story, plot, subjects, themes), the problems of interpretation, the intentions of the author and the perception of the reader, the work in its various contexts: biographical, literary, sociological; the formal aspects typical of certain genres, particularly the drama and poetry. The texts illustrating these aspects in French-Canadian literature are selected within the period from



Nelligan (nineteenth century) to the present day. Students taking this course will not be allowed to count French 20.268★ as part of the specific requirements for a Major or Honours degree in French.

Prerequisite: Ontario Grade 13 French, French 20.101, 20.102, 20.103 or equivalent.

Day division: Three hours a week.

*M. Gaulin*

French 20.181

### **Civilization**

This course entails the study of a certain number of important elements of the culture and civilization of two French-speaking countries, alternatively French Canada and France: culture, customs, institutions, etc., with emphasis on the present situation. English may be used by the instructor.

Prerequisite: Permission of the Department.

Not offered 1986-87.

French 20.188

### **Contemporary English-Canadian and French-Canadian Literature**

This course, which is offered by the French and the English departments, is designed for students who do not intend to select French as a Major or Honours subject. It provides a general introduction to the two major literatures of Canada, and is taught in the two languages. (Also listed as Canadian Studies 12.188 and English 18.188.)

Prerequisite: A basic reading knowledge of French.

Day division: Three hours a week.

*D. Smith*

French 20.210

### **Techniques d'expression écrite et orale pour journalistes**

Ce cours, destiné aux étudiants en journalisme, insiste sur l'étude des éléments qui constituent les codes de la presse écrite et électronique, tout en examinant la presse francophone au Canada.

Prerequisite: French 20.108, 20.111 or permission of the Department.

Day division: Three hours a week.

*A. Ruprecht*

French 20.211

### **Techniques d'expression écrite et orale (A)**

Ce cours prépare l'étudiant anglophone à composer des textes dans un français soutenu et nuancé, par l'enrichissement du vocabulaire, par l'emploi de mots précis, d'images et autres procédés utilisés dans la composition de textes. Pratique de la composition écrite et de l'exposé oral.

Prerequisite: French 20.111 or permission of the department.

Day and Evening divisions: Three hours a week.

*G. Riser and members of the Department.*

French 20.212

### **Techniques d'expression écrite et orale (B)**

Ce cours destiné aux étudiants francophones comporte des objectifs similaires à ceux du cours French 20.211, mais s'inspire d'une méthode et d'ouvrages adaptés à leur niveau de compétence linguistique.

Prerequisite: French 20.112 or permission of the Department.

Day division: Three hours a week.

*O. Condemine*

French 20.231

### **Initiation à la traduction**

Techniques de la traduction. Traduction de l'anglais au français et du français à l'anglais. Textes d'intérêt général. Prerequisite: French 20.111 or 20.112 or permission of the Department.

Day and Evening divisions: Three hours a week.

*J. Miquet, D. Rosse*

French 20.232★

### **Introduction à l'étude linguistique du français**

Revue des éléments essentiels en recherche linguistique; application de ces éléments à la description et à l'analyse de la langue française; préparation aux différents cours de linguistique française offerts au département.

Prerequisites: French 20.111 or 20.112 and Linguistics 29.100 or permission of the Department.

Day division, Fall term: Three hours a week.

*J.-J. van Vlasselaer*

French 20.233★

### **Phonétique et phonologie du français**

Révision des notions fondamentales de la phonétique française. Organes de la parole. Phonèmes du français. Phonétique articulatoire et acoustique; phonétique combinatoire. Prosodie. Notions fondamentales de la phonologie du français. Les traits distinctifs du français.

Prerequisite: French 20.111 or 20.112 and Linguistics 29.100 or permission of the Department.

Day division, Winter term: Three hours a week.

*V. Basseville*

French 20.261★

### **La littérature du Moyen Age**

Introduction aux principaux courants de la littérature médiévale et approfondissement d'un ou plusieurs aspects de celle-ci par l'étude détaillée de certains textes représentatifs.

Prerequisite: French 20.161 or 20.162 or 20.163 or permission of the Department.

Not offered 1986-87.

French 20.262★

### **La littérature du XVI<sup>e</sup> siècle**

Introduction aux théories de la Pléiade et aux aspects principaux de la littérature de la Renaissance, avec approfondissement de différents aspects de cette littérature par l'étude détaillée de quelques textes.

Prerequisite: French 20.161 or 20.162 or 20.163 or permission of the Department.

Day division, Fall term: Three hours a week.

*P. Clive*

French 20.263★

### **La littérature du XVII<sup>e</sup> siècle**

Le classicisme et/ou le mouvement baroque dans la littérature française du XVII<sup>e</sup> siècle, notamment le théâtre. Etude détaillée de plusieurs aspects de cette littérature dans un choix de textes représentatifs.

Prerequisite: French 20.161 or 20.162 or 20.163 or permission of the Department.

Not offered 1986-87.

French 20.264★

### **La littérature du XVIII<sup>e</sup> siècle**

La fin du classicisme, le siècle de la raison, les Encyclopédistes et les Philosophes. Approfondissement d'un ou plusieurs aspects de cette littérature par l'étude détaillée de quelques textes.

Prerequisite: French 20.161 or 20.162 or 20.163 or permission of the Department.

Day division, Winter term: Three hours a week.  
R. Galliani

French 20.265★

**La littérature du XIXe siècle**

Introduction aux principaux courants de la littérature française du XIXe siècle: Romantisme, Réalisme, Parnasse, Symbolisme. Etude plus détaillée d'un ou plusieurs de ces aspects dans un choix de textes représentatifs. Prerequisite: French 20.161 or 20.162 or 20.163 or permission of the Department. Not offered 1986-87.

French 20.266★

**La littérature du XXe siècle**

Survол de la littérature française moderne du Naturalisme au nouveau roman; l'unité et la diversité de cette littérature avec des exemples choisis parmi les textes représentatifs d'un ou plusieurs aspects les plus marquants. This course will not count as part of the specific requirements for a Major or Honours degree in French if taken in conjunction with French 20.162.

Prerequisite: French 20.161 or 20.162 or 20.163 or permission of the Department.

Evening division, Fall term: Three hours a week.

A. Elbaz

French 20.267★

**La littérature du XIXe siècle au Canada français**

Introduction aux principaux courants idéologiques et littéraires. Les débuts du roman et/ou de la poésie d'après quelques textes représentatifs.

Prerequisite: French 20.161 or 20.162 or 20.163 or permission of the Department.

Day division, Fall term: Three hours a week.

O. Condemine

French 20.268★

**La littérature du XXe siècle au Canada français**

Evolution des principaux genres littéraires vue dans une optique sociale et esthétique. Le cours portera principalement sur l'époque contemporaine. This course will not count as part of the specific requirements for a Major or Honours degree in French if taken in conjunction with French 20.163.

Prerequisite: French 20.161 or 20.162 or 20.163 or permission of the Department.

Day division, Winter term: Three hours a week.

O. Condemine

French 20.280★

**Civilisation de la France et de la francophonie**

Etude d'un certain nombre d'éléments importants de la culture et de la civilisation de la France et de la francophonie: institutions, activité culturelle et intellectuelle, divers aspects de la vie actuelle.

Prerequisite: Permission of the Department.

Day division, Winter term; Three hours a week.

R. Galliani

French 20.281★

**Civilisation du Canada français**

Etude d'un certain nombre d'éléments importants de la culture et de la civilisation du Canada français: institutions, activité culturelle et intellectuelle, divers aspects de la vie actuelle.

Prerequisite: Permission of the Department.

Day division, Fall term: Three hours a week.

S. Sarkany

French 20.282

**Le théâtre: Théorie et pratique**

Examen détaillé de plusieurs oeuvres théâtrales avec, pour objet, la préparation à des travaux pratiques (diction, interprétation théâtrale) et la participation à une ou plusieurs pièces présentées dans le cadre du cours.

Prerequisite: A First-year course in French or permission of the Department.

Evening division: Three hours a week.

J.-J. van Vlasselaer

French 20.310

**L'Ecriture journalistique**

Ce cours, destiné aux étudiants en journalisme, insiste sur l'analyse des mécanismes de l'écriture journalistique. L'étude des textes de nature différente (articles d'information, analyses, éditoriaux, reportages de fond, etc.) sera complétée par la rédaction d'articles sur l'actualité politique et autre.

Prerequisite: French 20.210 or permission of the Department.

Day division: Three hours a week.

G. Riser

French 20.312

**Cours de grammaire descriptive**

Etude de la langue française par une réflexion sur les structures de la langue et l'utilisation des grandes grammaires descriptives du français. Méthodologie de la recherche grammaticale, établissement de bibliographies et de corpus. Exercices pratiques. Cours commun aux étudiants anglophones et francophones.

Prerequisite: French 20.211 or 20.212 or permission of the Department.

Day division: Three hours a week.

P. van Ratten

French 20.331

**Traduction avancée**

Traduction de textes spécialisés (scientifiques, administratifs, commerciaux, juridiques, etc.) de l'anglais au français et du français à l'anglais.

Prerequisite: French 20.231 or permission of the Department.

Day division: Three hours a week.

J. Miquet

French 20.332

**Français canadien**

Histoire de la langue française au Canada; description de la phonétique, morphologie, syntaxe; le lexique: archaïsmes, anglicismes, canadianismes; variations sociales et régionales; problème de la norme.

Prerequisite: French 20.232★ or permission of the Department.

Evening division: Three hours a week.

S. Robinson

French 20.333★

**Histoire de la langue (A)**

Etude phonétique, graphique, syntaxique et morphologique du Vieux français (XIIe siècle) et du Moyen français (XVe siècle), avec mise en valeur des phases intermédiaires pour les principaux aspects du langage. Not offered 1986-87.

French 20.334★

**Histoire de la langue (B)**

Les transformations phonétiques, graphiques, morphologiques et syntaxiques les plus importantes du français



de la Renaissance au français moderne.  
Not offered 1986-87.

French 20.361

**La Poésie**

Le contenu précis de ce cours varie selon les années. Sujet pour 1986-87: la poésie française du XIXe siècle: néo-classicisme, romantisme, l'Art pour l'art, symbolisme. Lamartine: *Les Méditations poétiques*, Musset: *Les Nuits*, Hugo: *Les Rayons et les ombres*, Gautier: *Emaux et camées*, Baudelaire: *Les Fleurs du mal*, Verlaine: *Poèmes saturniens*, Rimbaud: *Les Illuminations*, Mallarmé: *Dix poèmes*. Les auteurs et leurs textes seront étudiés dans le cadre des arts et du mouvement des idées de leur époque.

Day division: Three hours a week.

E. Kaye

French 20.362

**Le Roman**

Not offered 1986-87.

French 20.363★

**Etudes littéraires**

Le contenu précis de ce cours varie selon les années. Sujet pour 1986-87: le théâtre du XVIIIe siècle. Ce cours étudiera les conceptions théâtrales, le message qu'elles comportent, la composition du public, la nature et les raisons du succès théâtral. Il analysera le lieu et la représentation, la mise en scène, le jeu des acteurs, et d'autres moyens d'expression. Textes: Lesage: *Tucaret*, Marivaux: *La Colonie*, Diderot: *Le Fils naturel*, Voltaire: *Zaïre*, Beaumarchais: *Le Mariage de Figaro*.

Evening division, Winter term: Three hours a week.

R. Galliani

French 20.364

**Le Théâtre**

Le contenu précis de ce cours varie selon les années.  
Not offered 1986-87.

French 20.366★

**Littérature et sciences humaines (I)**

Le contenu précis de ce cours varie selon les années. Sujet pour 1986-87: théâtre et société au XVIIe siècle en France. Dramatisation de la substance sociale, croyance, attitude, pulsion, le spectacle caractérise la vie quotidienne comme la vie de la cour royale. Les genres les plus développés, la tragédie et la comédie, montrent comment l'imaginaire façonne les forces du lieu théâtral, de la mise en scène et du jeu des acteurs de Molière, de Racine et de Corneille.

Evening division, Fall term: Three hours a week.

S. Sarkany

French 20.367★

**Méthodologie et littérature (I)**

Le contenu précis de ce cours varie selon les années.  
Not offered 1986-87.

French 20.381

**Aspects de la littérature canadienne-française**

Le contenu précis de ce cours varie selon les années. Sujet pour 1986-87: interprétations du roman québécois. Examen de l'importance accordée aux différents modes de représentation dans l'œuvre de quelques romanciers québécois modernes. Analyse du phénomène de la modernité et des différentes techniques narratives (la constitution du personnage, l'utilisation du point de vue, le temps, l'espace) dans leur relation avec la vision romanesque. Auteurs étudiés: Ringuelet, Langevin, Bes-

sette, A. Hébert, Aquin, Godbout, La Roque, F. Théoret.

Prerequisite: A course from the series French 20.261★ to 20.268★ or permission of the Department.

Evening division: Three hours a week.

D. Smith

French 20.431

**Traduction littéraire**

Traduction de l'anglais au français et du français à l'anglais de textes littéraires. Analyses de traductions déjà parues. Retraduction.

Prerequisite: French 20.231 or permission of the Department.

Day division: Two hours a week.

J. Miquet

French 20.432★

**Morphologie et syntaxe du français**

Grammaires modernes du français. Le cours a pour objet de familiariser les étudiants avec les grammaires modernes du français issues des derniers développements de la linguistique. On étudiera en particulier les systèmes grammaticaux.

Prerequisite: French 20.312 or permission of the Department.

Evening division, Fall term: Two hours a week.

P. Laurette

French 20.433★

**Sémantique et lexicologie du français**

Les méthodes modernes de la sémantique appliquées à l'analyse des textes littéraires. Sémantique, lexicologie et lexicographie françaises. Le cours portera en outre sur l'évolution de la sémantique, le concept de sens et de signification, la détermination des significations, l'évolution des sens et ses lois et l'établissement du lexique et sa structuration.

Day division, Fall term: Two hours a week.

P. van Rutten

French 20.434★

**Stylistique littéraire**

Le cours est destiné à sensibiliser les étudiants aux procédés de l'expression littéraire et à les préparer à la critique stylistique. On étudiera en particulier les points suivants: la théorie du style littéraire, la fonction de la langue dans l'expression littéraire; la phonostylistique: utilisation des accents, des rythmes, des sons; la stylistique des mots: l'utilisation du vocabulaire, les effets affectifs, les effets par évocation; les translations figuratives: métaphores, métonymies, etc.; la stylistique de la phrase, etc.

Prerequisites: French 20.232★ and 20.233★ or permission of the Department.

Day division, Winter term: Two hours a week.

P. van Rutten

French 20.435

**Linguistique appliquée: pédagogie de l'enseignement du français**

Revue des notions de linguistique, de phonétique et de psycholinguistique se rapportant à l'apprentissage et à l'enseignement du français comme langue première et langue seconde. Etude des processus d'acquisition de la langue. Description de la langue pour la préparation à l'enseignement. Critique scientifique des méthodes et des méthodologies d'enseignement. Etude des relations entre les recherches sur la communication et l'apprentissage du français.

Prerequisite: French 20.232★ or permission of the Department.  
Not offered 1986-87.

French 20.461

**Littérature d'Idées (I)**

Le contenu précis de ce cours varie selon les années. Sujet pour 1986-87: la querelle des femmes au XVI<sup>e</sup> siècle. La polémique au sujet du mérite et du démerite de la femme a inspiré plusieurs oeuvres importantes. Le cours étudiera les principales idées et théories qui nourrissent cette controverse. Il s'attachera à dégager, de l'examen de certains ouvrages représentatifs, la conception que la Renaissance se faisait du rôle de la femme dans la société et, en particulier, dans le mariage. Parmi les textes au programme: La Borderie: *L'Amye de court*, Fontaine: *La Contr'amyé de court*, Héroët: *La Parfaite Amye*, Rabelais: *Le Tiers Livre*, des nouvelles de Marguerite de Navarre et d'autres conteurs.

Prerequisite: A course from the series French 20.361 to 20.381 or permission of the Department.

Evening division: Two hours a week.

P. Clive

French 20.462

**Littérature d'Idées (II)**

Le contenu précis de ce cours varie selon les années.  
Not offered 1986-87.

French 20.463★

**Aspects de la littérature française (I)**

Le contenu précis de ce cours varie selon les années. Sujet pour 1986-87: la littérature engagée au tournant du siècle: origines, théories, évolution, influences et techniques. Etude d'oeuvres représentatives de Zola, Barrès, Péguy, Martin du Gard.

Day division, Fall term: Two hours a week.

A. Elbaz

French 20.464★

**Aspects de la littérature française (II)**

Le contenu précis de ce cours varie selon les années.  
Not offered 1986-87.

French 20.466★

**Littérature et sciences humaines (II)**

Le contenu précis de ce cours varie selon les années.  
Not offered 1986-87.

French 20.467★

**Méthodologie et littérature (II)**

Le contenu précis de ce cours varie selon les années. Sujet pour 1986-87: le roman idéologique: Malraux: *L'Espoir*, *La Condition humaine*. Analyses des structures politico-sociales narrativisées dans ces deux textes. Rapports entre narratologie et discursivité.

Prerequisite: A course from the series French 20.361 to 20.381 or permission of the Department.

Day division, Fall term: Two hours a week.

A. Halsall

French 20.468★

**Aspects de la littérature canadienne-française I**

Sujet pour 1986-87: les grandes années du théâtre québécois. Le théâtre québécois connaît un développement inattendu après la Seconde Guerre mondiale, surtout à partir de 1960, grâce à une pléiade de dramaturges de valeur. Ce cours présentera un aperçu d'ensemble de l'oeuvre théâtrale de six écrivains, ainsi que l'étude approfondie d'une pièce de chacun d'entre eux: Gratien Gélinas, Marcel Dubé, Françoise Loranger, Michel Trem-

blay, Jean Harbeau et Roch Carrier.

Prerequisite: A course from the series French 20.361 to 20.381 or permission of the Department.

Evening division, Fall term: Two hours a week.

O. Condemine

French 20.469★

**Aspects de la littérature canadienne-française II**

Sujet pour 1986-87: Les aînés tragiques de la poésie canadienne, d'Octave Crémazie et Emile Nelligan. A travers les oeuvres d'Octave Crémazie et Emile Nelligan, ce cours étudiera la contribution originale de ces deux poètes canadiens-français qui ont laissé une empreinte significative dans l'évolution de la poésie du XIX<sup>e</sup> siècle.

Prerequisite: A course from the series French 20.361 to 20.381 or permission of the Department.

Evening division, Winter term: Two hours a week.

O. Condemine

French 20.482

**Initiation à la recherche**

Comment et où effectuer des recherches pour l'étude d'une oeuvre, d'un auteur ou d'un thème. Les sources bibliothécaires et autres. Travaux pratiques: établissement de bibliographies, de fiches, d'une édition critique, etc.

Prerequisite: Permission of the Department.

Not offered 1986-87.

French 20.483

**Tutorial**

Prerequisite: Permission of the Department.

French 20.484★

**Tutorial**

Prerequisite: Permission of the Department.

**Graduate Courses Open to Undergraduates**

(With permission of the Department)

*French*

20.502★ Problèmes de grammaire et de lexique en français moderne

20.503★ Histoire de la langue française

20.504★ Linguistique du français canadien

20.506★ Linguistique du français langue seconde

20.541★ Sémiotique littéraire. La poésie de Gaston Miron

20.543★ Problèmes du roman au Canada français

20.544★ Balzac et Stendhal romanciers

20.545★ Le théâtre de l'absurde des années cinquante

20.546★ Le théâtre de Michel Tremblay

20.547★ L'autobiographie en France

20.548★ Zola, romancier naturaliste

20.549★ Molière

20.550★ L'évolution de l'écriture romanesque dans l'oeuvre de Jacques Godbout

20.551★ La poésie de Nelligan à la modernité

20.561★ Sémiotique culturelle

20.562★ L'Encyclopédie

20.563★ Esthétique au XVIII<sup>e</sup> siècle

20.564★ La science-fiction

20.570★ La bande dessinée d'expression française

**Courses Planned for Evening Division**

An effort will be made to offer as wide a selection as possible of courses in the Evening division of the Winter session over the next four years.



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## Officers of Instruction

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### *Chairman*

A.I. Wallace

### *Supervisor of Graduate Studies*

J. Clarke

### *Supervisors of B.A. Studies*

D. Bennett

J.E. Tunbridge

### *Supervisors of B.Sc. Studies*

M.W. Smith

J.K. Torrance

### *Supervisor of Special and Part-time Students*

D.M. Anderson

### *Professors*

J. Clarke

J.P. Johnson, Jr.

D.B. Knight

D.M. Ray

D.R.F. Taylor (*Joint appointment, International Affairs*)

J.K. Torrance

P.J. Williams

### *Associate Professors*

D.M. Anderson

D. Bennett

M.W. Smith

J.E. Tunbridge

A.I. Wallace

T.P. Wilkinson

### *Assistant Professors*

M.F. Fox

S. Mackenzie

### *Map Librarian*

B.E. Farrell

### *Geotechnical Science Laboratories*

L. Boyle

A. Pendlington

### *Senior Programmer/Analyst*

S. Prashker

### *Cartographer*

C.E. Earl

### *Laboratory Demonstrator*

D. Patterson

### *Adjunct Professors*

D. Monahan

R.O. Ramseier

G.D. Taylor

### *Sessional Lecturers*

R.M. Defoe

D. De Lisle

B.E. Farrell

E.W. Manning

J.D. McCuaig

S. Prashker

A. Rencz

### *Visiting Research Professor*

M. Parkes

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## General Information

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The Department of Geography has programs of study leading to the following Degrees: B.A., B.A. (Honours), B.Sc. (Honours), and M.A. Concentrations can be developed (with particular reference to Canada and parts of northern lands, and the Third World) in: urban studies; regional development; economic geography; resource and land-use planning; cultural, historical and political geography; physical geography and environmental management. Geographic skills are developed in areas such as: air photo interpretation; remote sensing; traditional and computer cartography and data processing. A mixture of classroom, laboratory, seminar and field studies is used in the program.

It is also possible to complete joint B.A. Majors and Honours programs between Geography and many Arts and Social Science disciplines, including Law, Economics, History, Anthropology, Psychology, Political Science, Canadian Studies, Sociology, Journalism and Biology. There is also a Combined Honours Geography and Biology program. Even without the formality of a Combined program it is possible for those pursuing a single Major or Honours program in Geography to develop a subsidiary thematic or regional concentration by taking a variety of non-geography electives. Please contact the Department of Geography for information about these possibilities.

### Entry into Upper-Level Courses

Courses are normally taken in the year corresponding to the first digit in the course numbers. However, a Third-year student may take 400-level courses provided the student has the necessary prerequisites, a Geography grade-point average high enough for entry into Honours and permission of the Department. Students without the formal prerequisites for courses may take Geography courses with permission of the Department.

Fourth-year Honours students may include one half credit at the 500 level towards their Honours degree only if they have a B+ grade-point average in Geography, appropriate background courses and the written permission of the Graduate Supervisor and the instructor of the course.

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## Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all departmental regulations and requirements as set out below.

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## B.A. Major Programs

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### Major in Geography

This program is offered for students who wish a liberal arts education with emphasis in geography. Guidance on patterns of courses for particular interests is available from the Department.

Students admitted to a single Major in Geography are required to complete the equivalent of at least seven





credits and not more than nine credits in Geography, which must include:

1. *either* (i) Geography 45.101 or (ii) Geography 45.102★ and 45.103★;
2. Geography 45.200★, 45.201★, 45.202★, 45.210★ (or 45.211★), 45.220★, 45.230★, 45.299★;
3. at least two and a half additional Geography credits, of which two must be at the 300 level or 400 level.

### Combined Majors

Students admitted to a Combined Major in Geography and another department are required to complete the equivalent of at least five credits and not more than seven credits in Geography, which must include:

1. *either* (i) Geography 45.101 or (ii) Geography 45.102★ and 45.103★;
2. two of Geography 45.210★ (or 45.211★), 45.220★, 45.230★;
3. two of Geography 45.200★, 45.201★, 45.202★;
4. at least two additional Geography credits (Geography 45.299★ is recommended); at least one Geography credit must be at the 300 level.

### B.A. Honours Programs

The Honours program in Geography is offered for students who wish to prepare for graduate study, a career in planning, government, business, or other specialization in which the field of geography offers the appropriate training. Information on recommended patterns of courses related to various interests is available from the department. There is substantial freedom in the program for students to take courses of special interest in the University, as well as courses in geography and related disciplines.

Students reading for an Honours degree must satisfy the general Faculty regulations for Honours (pp. 89-90).

Fourth-year Honours students may take one half credit listed in the Graduate Studies and Research Calendar only if they have a B+ grade-point average in Geography and permission of the Department.

### Honours in Geography

Students admitted to the Honours Geography program are required to complete the equivalent of 20 credits beyond Senior Matriculation or Qualifying University year in Arts or Social Sciences. The equivalent of at least 11 credits and not more than 13 credits must be in Geography and must include:

1. *either* (i) Geography 45.101 or (ii) Geography 45.102★ and 45.103★;
2. Geography 45.200★, 45.201★, 45.202★, 45.210★ (or 45.211★), 45.220★, 45.230★, 45.299★;
3. Geography 45.398★ and 45.499;
4. at least five additional Geography credits, of which at least two must be at the 300 level and at least two must be at the 400 level.

Students wishing to take the Type A Specialist Certificate at an Ontario College of Education are advised to consult the Supervisor of Honours Studies as early as possible in order that an appropriate program can be arranged.

### Combined Honours

Students taking Combined Honours in Geography and another subject are required to complete the equivalent of at least seven credits and not more than nine credits in geography which must include:

1. *either* (i) Geography 45.101 or (ii) Geography 45.102★ and 45.103★;
2. two of Geography 45.210★ (or 45.211★), 45.220★, 45.230★;
3. two of Geography 45.200★, 45.201★, 45.202★;
4. Geography 45.299★ or an approved field course in the other Honours department;

5. *either* Geography 45.398★ and 45.499 plus at least two additional Geography credits, of which at least one must be at the 300 level and at least one must be at the 400 level; or an Honours Research Essay or equivalent in the other Honours department with at least three and a half additional Geography credits which must include at least one credit at the 300 level and two at the 400 level.

### B.A. Combined Honours in Biology and Geography

For Geography requirements see above; for Biology requirements see p. 338. Students must contact both departments for advice.

### B.Sc. Honours Programs

#### Honours B.Sc. in Geography

The Bachelor of Science Honours program in Physical Geography is designed to give the student an understanding of the earth's surface as man's physical environment. The student will specialize in the study of properties and processes of the earth's surface materials and atmosphere.

The program consists of 20 credits beyond Senior Matriculation or Qualifying University year Science, selected in a pattern approved by the Supervisor of Honours Studies in the Department of Geography, and consistent with the following requirements:

1. The First year of the program will be consistent with Faculty of Science requirements for First-year Science. (Note that Physics 75.100 or 75.105 is required in Second year if not taken in First year.)
2. The program will contain eight credits in Geography at or beyond the 200 level, including the Honours Research Project, Geography 45.496, which should be taken in the final year; and seven credits selected from the list below, of which at least two must be at the 300 level and at least two at the 400 level. These should include Geography 45.210★, 45.211★, 45.299★, 45.308, 45.311★, 45.312★, and 45.345★. In special cases students may take an appropriate graduate course in their final year, with permission of the Supervisor of Graduate Studies.
3. The remaining seven credits must include:
  - (a) two approved credits in Science, not in Geography, beyond the 100 level (Geology 67.233★ and 67.281★ are recommended);
  - (b) two approved credits in Science, Computer Science or Engineering;
  - (c) two Arts or Social Science electives, one of which must be an approved credit not in Geography;
  - (d) one free elective.

*Physical Geography Courses*

- 45.200★ Elements of Graphic and Cartographic Design
- 45.201★ Statistical Methods in Geography
- 45.202★ Air Photo Interpretation and Remote Sensing
- 45.210★ The Physical Environment
- 45.211★ Geomorphology and Environmental Management
- 45.299★ Introduction to Field Techniques
- 45.303★ Quantitative Geography
- 45.308 Geography of Soils
- 45.311★ Environmental Monitoring
- 45.312★ Geomorphology
- 45.324★ Cartographic Theory and Design
- 45.325★ Cartographic Production
- 45.326★ Computer-Assisted Cartography
- 45.345★ Physical Climatology and Climatic Change
- 45.400★ Field Studies
- 45.402★ Problems in Physical Geography
- 45.403★ Remote Sensing of the Environment
- 45.404★ Environmental Impact Assessment
- 45.405★ Problems of Environmental Impact Assessment
- 45.411★ Quaternary Geography
- 45.412★ Terrain Analysis
- 45.413★ Hydrology
- 45.414★ Microclimatology
- 45.415★ Slope Development: Forms, Processes and Stability
- 45.418★ Selected Topics in Physical Geography
- 45.424★ Introductory Soil Mechanics and Engineering Geology

*Note:*

Credit for Geography 45.201★ is precluded if credit for Mathematics 69.257★ or an introductory statistical analysis course in the social sciences (Economics 43.220, Political Science 47.270 or Psychology 49.200) has already been obtained.

A recommended program is:

*First Year*

Mathematics 69.107★ and 69.117★;  
 Geology 67.100;  
 two of Geography 45.210★ with 45.211★ or Biology 61.100, Chemistry 65.100 or Physics 75.100;  
 Arts or Social Science elective (may not be Geography 45.101 if 45.210★ with 45.211★ is selected).

*Second Year*

Geography 45.200★, 45.202★, 45.299★;  
 one of: Geography 45.210★ with 45.211★; 45.308; 45.345★;  
 with an additional half credit from the preceding list of approved Physical Geography courses;  
 Mathematics 69.257★;  
 Science elective or Physics 75.100 or 75.105 (required course in Second year if not taken in First year);  
 Arts or Social Science elective.

*Third Year*

Geography 45.311★ or 45.312★;  
 either Geography 45.308; or 45.345★ with an additional half credit from the preceding list of approved Physical Geography courses;  
 one 400-level Geography credit;  
 one Science Continuation credit;  
 Arts or Social Science elective.

*Fourth Year*

Three 400-level Geography credits (including 45.496);  
 one Science Continuation credit;  
 free option.

*Note:*

A Human Geography course is recommended as one of the Arts or Social Science electives.

**Combined Honours B.Sc. in Biology and Physical Geography**

Students desiring a comprehensive basic education in both Biology and Physical Geography may apply to a Combined Honours B.Sc. program. Applicants must satisfy entry requirements of the Honours B.Sc. program. Course requirements of the Combined Honours B.Sc. program are as follows:

1. Biology 61.100 (or 61.101), Mathematics 69.107★ and 69.117★, Chemistry 65.100 and one of Geology 67.100 or Physics 75.100 or 75.105. Physics must be taken in this program or Grade 13 Physics must be presented as an entrance credit.
2. Two optional credits that are acceptable courses offered by the Faculties of Arts or Social Sciences. A credit from Geography courses other than the Physical Geography courses on this page, such as Geography 45.101, is recommended.
3. One additional Science credit from the list on p. 330 Geography (see course list on this page) beyond First-mended).
4. One free option credit.
5. Ten credits in Biology (or Biochemistry) and Physical Geography (see course list on this page) beyond First-year level, including at least one half credit involving a field course. Not more than six credits in this group should be taken in one department and not more than six may be at the 200 level.
6. One additional credit in Science or Computer Science above the 100 level, not in Biology or Geography and chosen in consultation with the student's program adviser.
7. Biology 61.498 or Geography 45.496.

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**Graduate Programs**

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The Department of Geography offers graduate programs in human geography, physical geography and geotechnical science. For further details consult the Graduate Studies and Research Calendar.

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**Courses Offered**

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*The following courses are offered each academic year:*  
 Geography 45.101, 45.102★, 45.103★, 45.200★, 45.201★, 45.202★, 45.210★, 45.211★, 45.220★, 45.230★, 45.299★, 45.308, 45.398★, 45.496, 45.499. Other courses are offered most years, some on an alternating basis as indicated in the course description. Details of courses offered in 1986-87 can be obtained from the Department of Geography.

Geography 45.101

**The Geographic Web**

An introductory course concerned with the structure of two major systems: the ecological system that links man and his environments, and the spatial system that links one region or place to another. Concepts and methods useful in geography are introduced through an integrated view of current concerns with the environment and ecology, and with regional contrasts and imbalances in human welfare. Four topic areas are introduced: I. practical work in geography; II. the physical environment; III. population, resources and space; IV. cultural, urban and political systems.

Day and Evening divisions: Section A: Lectures and dis-



cussion three hours a week; Section B: Tutored modules, self-paced, three hours a week.

**Geography 45.102★**

**Geographic Analysis of Contemporary Issues: Environment, Economy and Resource Use**

Examination of the variety of geographic factors operating in the contemporary world, emphasizing global and regional issues in which environmental, economic geography and resource problems are crucial; organized around a series of themes which include global climatic change, desertification, global food problems, the geographic impact of declining oil supply, and the world oceans — changing conditions and role.

Lectures two hours a week, laboratory/discussion one hour a week.

**Geography 45.103★**

**Geographic Analysis of Contemporary Issues: Cultural and Political**

Examination of the variety of geographic factors operating in the contemporary world, emphasizing global and regional issues in which political and cultural geography is central; organized around a series of themes including colonial linkages to Third World development, metropolitan dominance and "mini-states," diffusion of technology and values, territorial integration and fragmentation.

Lectures two hours a week, laboratory/discussion one hour a week.

**Geography 45.200★**

**Elements of Graphic and Cartographic Design**

An introduction to the analysis and presentation of spatial data in maps and diagrams.

Prerequisite: Geography 45.101 or 45.102★ and 45.103★ or permission of the Department.

Lectures two hours a week, laboratory two hours a week.

**Geography 45.201★**

**Statistical Methods in Geography**

Introduction to statistical analysis as applied to geography. For Geography Honours and Majors students additional credit for this course is precluded if credit for Mathematics 69.257★ or 69.250 has already been obtained. Precludes additional credit for introductory statistical analysis courses in the social sciences (Economics 43.220, Political Science 47.270 and Psychology 49.200).

Prerequisite: Geography 45.101 or 45.102★ and 45.103★ or permission of the Department.

Lectures two hours a week, laboratory two hours a week.

**Geography 45.202★**

**Air Photo Interpretation and Remote Sensing**

Introduction to the techniques of air photo interpretation, remote sensing of the environment and elements of photogrammetry.

Prerequisite: Geography 45.101 or 45.102★ and 45.103★ or permission of the Department.

Lectures two hours a week, laboratory two hours a week.

**Geography 45.210★**

**The Physical Environment**

The physical geography of natural environments, emphasizing the kinds of earth materials, their properties, and the processes that act upon them.

Prerequisite: Geography 45.101 or 45.102★ and 45.103★ or permission of the Department.

Lectures two hours a week, laboratory three hours a week.

**Geography 45.211★**

**Geomorphology and Environmental Management**

Examination of earth surface materials, processes and hazards in relation to their physical and socio-economic importance; environmental impacts and the need for land management.

Prerequisite: Geography 45.101 or 45.102★ and 45.103★ or permission of the Department.

Lectures two hours a week, laboratory three hours a week.

**Geography 45.220★**

**Geography of the Global Economy**

An overview of the global economy, focusing on the geographical pattern of its evolution and its resource base. Theories of spatial relationships at various scales, including the development of core-periphery contrasts, national urban systems and regional specializations in agriculture and industry.

Prerequisite: Geography 45.101 or 45.102★ and 45.103★ or permission of the Department.

Lectures and discussion three hours a week.

**Geography 45.221★**

**Geographical Challenges of Contemporary Economies**

Geographical analysis of problems facing modern economies, within different political frameworks and at varying levels of technological development. Includes provision of food and energy supplies, the activity of multinational corporations, policies to combat regional economic disparities and problems of growth and change in urban areas.

Prerequisite: Geography 45.220★ is recommended.

Lectures and discussion three hours a week.

**Geography 45.230★**

**The Cultural Landscape**

Man-moulded and man-modified landscapes and the perception of these landscapes by different ethnic groups are explored; processes of landscape change in the Ottawa Valley and Eastern Ontario are compared with other areas in Canada and the world; the impacts of political and religious ideology and developmental processes are examined.

Prerequisite: Geography 45.101 or 45.102★ and 45.103★ or permission of the Department.

Lectures and discussion three hours a week.

**Geography 45.231★**

**Conflict and Accord in the Modern World**

The role of boundaries, especially cultural and political; the meanings given to space, with emphasis on their impact on development processes and on ethnic and international conflict; culture area, cultural ecology and plural societies.

Prerequisite: Geography 45.230★ is recommended.

Lectures and discussion three hours a week.

**Geography 45.299★**

**Introduction to Field Techniques**

An intensive week-long field camp (following Fall registration) and meetings through the Fall term. Geographical techniques of observation, data gathering, measurement and analysis are explored in group work and individual projects. Cost of room and board relating to the field camp are borne by the student. Required for Geography Majors, Honours and Combined Honours students.

Prerequisite: Geography 45.101 or 45.102★ and 45.103★ or permission of the Department.

One week field camp and two hours lecture/laboratory a week.



**Geography 45.303★**

**Quantitative Geography**

Multiple-regression and factor analytic techniques as applied to problems of classification, regionalization, explanation and hypothesis testing in geographical research. Various taxonomic algorithms are examined and an introduction to geographical models is provided.

Prerequisites: Geography 45.201★ and enrolment in a Geography degree program or permission of the Department.

Lectures and laboratory three hours a week.

**Geography 45.305★**

**Canada: A Geographic System**

Integration of the various interpretations of the geography of Canada, including staple-export theory, metropolitanism, and heartland-hinterland relationships, into a broad systems framework that reveals the interdependencies among various policy issues of concern to Canadians.

Prerequisite: Third-year standing or permission of the Department.

Lectures three hours a week.

**Geography 45.306★**

**Canada: A Regional Mosaic**

Regional characteristics of Canada; concepts of and the nature of regionalism; comparisons of the nature and underlying causes of regional differences that underlie many current Canadian problems.

Prerequisite: Third-year standing or permission of the Department.

Lectures three hours a week.

**Geography 45.308**

**Geography of Soils**

The chemical and physical properties of soils; soil types and their distribution.

Prerequisites: For B.Sc. students: Geography 45.210★; for B.A. students: Geography 45.210★ and Third-year standing, or permission of the Department.

Lectures two hours a week, laboratory three hours a week.

**Geography 45.311★**

**Environmental Monitoring**

A course designed to instruct students how to carry out field, laboratory and archival investigations needed to understand physical, environmental processes and their role in the origin, history and character of specific sites and environments.

Prerequisites: For B.Sc. students: Geography 45.210★; for B.A. students: Geography 45.210★ and Third-year standing, or permission of the Department.

Day division, Fall term: Lectures two hours a week, laboratory three hours a week.

**Geography 45.312★**

**Geomorphology**

The theory of landforms and geomorphic processes.

Prerequisites: For B.Sc. students: Geography 45.210★; for B.A. students: Geography 45.210★ and Third-year standing or permission of the Department.

Lectures two hours a week; laboratory three hours a week.

**Geography 45.320★**

**The Canadian City: Internal Structure and Contemporary Problems**

The internal structure of the Western city with explicit application to Canadian cities; current urban problems and their attempted resolutions, with particular focus on: inner city revitalization and peripheral expansion, movement toward metropolitan organization of the city; evolving trans-

portation systems and their interaction with land use.

Prerequisite: Geography 45.220★ or permission of the Department.

Lectures three hours a week.

**Geography 45.321★**

**Systems of Cities: Global Perspectives**

Examination of global evolution of urban systems; contemporary city systems as a theoretical concept, emphasizing current research into growth mechanisms and prospects for their regulation; the global diversity of urbanism, taking an overview of systems and considering contrasting internal patterns.

Prerequisite: Geography 45.220★ or permission of the Department.

Lectures three hours a week.

**Geography 45.324★**

**Cartographic Theory and Design**

Theories and analysis of visual imagery, especially as applied to graphic communication of spatial information. Precludes additional credit for Geography 45.325, no longer offered.

Prerequisites: Geography 45.200★ and Third-year standing, or permission of the Department.

Lectures and practical three hours a week.

**Geography 45.325★**

**Cartographic Production**

Principles of design and production used by professional cartographers. Each student produces a multi-colour thematic map using state-of-the-art map-making operations. Precludes additional credit for Geography 45.325, no longer offered.

Prerequisites: Geography 45.200★, 45.324★ (or concurrent enrolment) and Third-year standing or permission of the Department.

Lectures two hours a week, laboratory three hours a week.

**Geography 45.326★**

**Computer-Assisted Cartography**

The use of micro-computers in the presentation of spatial information. An introductory computer science course is recommended.

Prerequisites: Geography 45.200★, 45.201★ (or equivalent), 45.324★ (or concurrent enrolment) and Third-year standing, or permission of the Department.

Lectures two hours a week, practical two hours a week.

**Geography 45.329★**

**Geography of Development**

Evolution of patterns of world inequality and the problem of development; theories and case studies illustrating different strategies for growth and development; spatial and ecological dimensions and the role of culture and institutional frameworks; rural-urban interaction; "developed" and "under-developed" countries as one interdependent system.

Prerequisite: Geography 45.220★ or 45.230★ or 45.231★ or permission of the Department.

Lectures three hours a week.

**Geography 45.330★**

**Developing Nations of Inter-Tropical Africa**

Geographical aspects of the problems and potential of the developing nations of inter-tropical Africa. The interaction of men and environment is examined as well as the historical developments which have led to some of the present day situations.

Prerequisite: Third-year standing or permission of the Department.

Lectures three hours a week.



**Geography 45.331★**

**Cultural Geography of the Caribbean**

Caribbean lands and societies are examined from the viewpoint of cultural geography, with an emphasis upon the culture history that has produced the pluralistic societies that characterize the modern Caribbean.

Prerequisite: Geography 45.230★ or 45.231★ or permission of the Department.

Lectures three hours a week.

**Geography 45.332★**

**Cultural Geography of the South West Pacific**

Cultural and racial complexities and diverse patterns of population distribution and man/land relationships are examined from the viewpoint of cultural geography and related to problems of development in Australia, New Zealand and the islands of the South West Pacific.

Prerequisite: Geography 45.230★ or 45.231★ or permission of the Department.

Lectures three hours a week.

**Geography 45.333★**

**Land Use, Regional Development and Planning in Canada**

Introduction to land-use planning in Canada, with the chief emphasis on Ontario. The forces affecting land use in Canada, evolution of local and regional planning, the nature of municipal planning, the roles of governments in local, regional and national planning, and relationships between conservation, regional development and land resource planning. Selected Ontario and federal legislation is examined.

Prerequisite: Third-year standing or permission of the Department.

Lectures two hours a week, one hour discussion group.

**Geography 45.334★**

**Renewable Resource Planning in a Local Area**

A planning-oriented examination of a local river basin, aimed at developing a co-ordinated plan for renewable resource management, utilizing existing local, regional and watershed legislation in Ontario. Students work in project teams, under supervision, to develop a practical plan for land use, water resource management, urban development, recreational space and environmental preservation.

Prerequisite: Geography 45.333★ or permission of the Department.

Lectures, discussion and project work three hours a week.

**Geography 45.335**

**Historical Geography of Canada**

An introduction to the methodology of historical geography and to the historical geography of Canada.

Prerequisite: Geography 45.230★ or History 24.230 or 24.231 or permission of the Department.

Lectures three hours a week.

**Geography 45.337★**

**Systematic Political Geography**

A systematic analysis of political structures, processes and behaviour from a geographic perspective through examination of the "classical" works in political geography and current literature.

Prerequisite: Geography 45.103★ or 45.231★ or permission of the Department.

Lectures three hours a week.

**Geography 45.340★**

**The Location of Industry and Public Services**

Theories of industrial location and of the geographical behaviour of business corporations. Geographical decision making in the public sector, especially in urban areas.

Prerequisite: Geography 45.220★ or permission of the Department.

Lectures three hours a week.

**Geography 45.341★**

**Geographical Analysis of Regional Economies**

Examination of the various bases for regional economic development, including resource endowment, relative location and the significance of external influences. Relationships between economic structure and spatial structure at various scales. Issues of theory and policy are both addressed.

Prerequisite: Geography 45.220★ or permission of the Department.

Lectures and discussion three hours a week.

**Geography 45.345★**

**Physical Climatology and Climatic Change**

Explanation of global climates in terms of the energy and water balance regimes of the earth and its atmosphere; history of climate; contemporary issues in climatic change and possible future climates.

This course is offered only in alternate years. Students wishing to take Geography 45.414★ must take Geography 45.345★ in their Second or Third year, depending on when it is offered.

Prerequisite: Geography 45.210★ or permission of the Department.

Lecture/laboratory three hours a week.

**Geography 45.351★**

**Northern Lands**

An analysis of the physical characteristics, historical geography, economic resources, settlement patterns and problems and the future development of Arctic and Sub-arctic lands, focusing primarily on Canada.

Prerequisite: Third-year standing or permission of the Department.

Lectures three hours a week.

**Geography 45.360★**

**Soviet Union**

An examination of the problems of the Soviet Union emphasizing locational factors, man/land relationships and areal differentiation.

Prerequisite: Third-year standing or permission of the Department.

Lectures three hours a week.

**Geography 45.361★**

**East Europe**

An examination of the problems of Eastern Europe emphasizing locational factors, man/land relationships and areal differentiation.

Prerequisite: Third-year standing or permission of the Department.

Lectures three hours a week.

**Geography 45.370★**

**Population Geography**

Studies of the distributional aspects of population attributes. The areal patterns of population characteristics and their spatial variations associated with differences in the nature of places are examined. Migratory movements are considered within the framework of spatial models of interactions between locations.

Prerequisite: Either Geography 45.231★ or 45.220★ or permission of the Department.

Lectures three hours a week.

Geography 45.374

**Local Government Law**

Offered in the Department of Law as Law 51.374.

Geography 45.395★

**Selected World Regional Problems**

Geographical analysis of topical problem areas in the world community.

Prerequisite: Third-year standing or permission of the Department.

Lectures three hours a week.

Geography 45.398★

**Research Methods and Design**

Approaches to research problems in geography; identification of a research topic, research design including geographic data acquisition and analysis. Students are given the opportunity to design and evaluate research proposals. Required for Geography B.A. Honours students. Prerequisite: Third-year Honours standing in Geography or permission of the Department.

Lectures and discussion three hours a week.

Geography 45.400★

**Field Studies**

Field observation and methodology in a selected region; individual or group basis.

Prerequisite: Permission of the Department.

Day or Evening division, Fall or Winter terms: Hours to be arranged.

Geography 45.401★

**Problems in Human Geography**

A course designed to permit a student to pursue his or her interests in a selected field of human geography. The student prepares papers for discussion with the tutor.

Normally only one half credit in Geography 45.401★ may be presented for the degree and additional credit for Geography 45.402★ is precluded.

Prerequisites: Final-year Honours standing and permission of the Department (by special arrangement only).

Day division, Fall or Winter term: Hours to be arranged.

Geography 45.402★

**Problems in Physical Geography**

A course designed to permit a student to pursue his or her interests in a selected field of physical geography. The student prepares papers as the basis for discussion with the tutor.

Normally only one half credit in Geography 45.402★ may be presented for the degree and additional credit for Geography 45.401★ is precluded.

Prerequisites: Final-year Honours standing and permission of the Department (by special arrangement only).

Day division, Fall or Winter term: Hours to be arranged.

Geography 45.403★

**Remote Sensing of the Environment**

The recording of earth features from suborbital and orbital altitudes and applications to the study of natural and man-made environments. Interpretation and geometry of the air photo; technical aspects include the electro-magnetic spectrum, active and passive sensors, sensor platforms, and visual and digital image analysis; practical applications are explored in such areas as agriculture, forestry, corridor mapping, hydrology, urban analysis and regional planning, and northern environments.

Prerequisites: Geography 45.202★ and Honours standing or permission of the Department.

Lectures two hours a week, laboratory two hours a week.

Geography 45.404★

**Environmental Impact Assessment**

An examination of the principles, scope and purpose of environmental impact assessment, from conceptual and methodological points of view. The broad range of environmental and socio-economic impacts of development projects is illustrated by case studies.

Prerequisite: Fourth-year Geography Honours standing or, for non-Geography students, permission of the Department. Lectures and seminars four hours a week.

Geography 45.405★

**Problems of Environmental Impact Assessment**

A project-oriented course in which students apply the principles and methods of environmental impact assessment to selected development projects.

Prerequisite: Geography 45.404★ or permission of the Department.

Lectures and seminars four hours a week.

Geography 45.406★

**Selected Topics in Cartography**

Specialised themes in cartography, selected to reflect faculty interests.

Prerequisites: Geography 45.324★ and permission of the Department.

Lectures three hours a week.

Geography 45.411★

**Quaternary Geography**

Changes in the physical environment of the earth during and subsequent to the last ice age. (Also listed as Geology 67.415★.)

Prerequisites: Geography 45.308 and 45.345★ or permission of the Department.

Lectures three hours a week.

Geography 45.412★

**Terrain Analysis**

Statistical techniques of morphometric and spatial analysis; applications in geomorphology and geography.

Prerequisites: Geography 45.201★ or equivalent, and Honours standing or permission of the Department.

Lectures three hours a week.

Geography 45.413★

**Hydrology**

Offered in the Department of Civil Engineering as Engineering 82.441★. (Also listed as Geology 67.419★.)

Geography 45.414★

**Microclimatology**

The formation of microclimates near the earth's surface; energy and water flows; the interaction of atmospheric processes with the physical properties of surfaces.

Prerequisite: Geography 45.345★ or permission of the Department.

Lectures and laboratory three hours a week.

Geography 45.415★

**Slope Development: Forms, Processes and Stability**

The various forms of sloping ground, their origin and present behaviour in relation to environment and materials. Landslides, mudflows, creep, soil erosion; criteria for relative stability.

Prerequisite: Geography 45.308 or permission of the Department.

Lectures, laboratories and field studies three hours a week.



**Geography 45.418★**

**Selected Topics in Physical Geography**

A course focusing on selected topics in physical geography. Topics for 1986-87: periglacial phenomena, the effects of freezing and thawing on soils, and related issues.

Prerequisites: Fourth-year standing and permission of the Department.

Lectures/laboratory three hours a week.

**Geography 45.421★**

**Selected Themes in Urban Geography**

A seminar developed on selected themes, introduced in Geography 45.320★ or 45.321★, for example, perception and consumer behaviour in shopping, planning concepts and development; application in the specific context of Ottawa.

Prerequisite: Geography 45.320★ or permission of the Department; Geography 45.321★ recommended.

Seminars three hours a week.

**Geography 45.424★**

**Introductory Soil Mechanics and Engineering Geology**

Offered in the Department of Civil Engineering as Engineering 82.328★. (Also listed as Geology 67.417★.)

**Geography 45.425★**

**Geography of Social Well-Being**

The geography of social well-being is concerned with describing and explaining spatial variations and correlations of social indicators. The course examines the extent to which locational and spatial arrangements influence the equality, justice or fairness of access to life-chances.

Prerequisite: Geography 45.303★ and Honours standing, or permission of the Department.

Lectures and seminars three hours a week.

**Geography 45.426★**

**Medical Geography**

Medical geography investigates association between health and environments, the diffusion of diseases from place to place, and the location and provision of health care facilities.

Prerequisites: Geography 45.303★ and Honours standing, or permission of the Department.

Lectures and seminars three hours a week.

**Geography 45.431★**

**Advanced Cultural Geography**

Cross-cultural thematic examination of territorial organization, territoriality, mental maps, geographies of the mind, and landscape impact of authority and ideology. Regional foci are principally Canada and Africa.

Prerequisite: Geography 45.230★ or permission of the Department; Geography 45.231★ recommended.

Seminar three hours a week.

**Geography 45.433★**

**Urban Planning**

Offered in the Department of Civil Engineering as Engineering 82.333★.

**Geography 45.434★**

**Transportation**

Offered in the Department of Civil Engineering as Engineering 82.434★.

**Geography 45.435★**

**Historical Geography**

The relation of geography and history, the use of field techniques, primary documents, model building and statistical methods in historical geography. Emphasis is given

to local studies.

Prerequisite: Geography 45.335 or permission of the Department.

**Geography 45.440★**

**Advanced Political Geography**

Systematic concepts in political geography are applied to the analysis of specific contemporary regional problems, territorial conflicts and case studies such as European integration, the Middle East and Southern African conflicts, and the management of the world's oceans.

Prerequisite: Geography 45.337★ or permission of the Department.

Lectures three hours a week.

**Geography 45.442★**

**Transportation Geography**

Geographical appraisal of transportation systems in relation to their physical, social, and economic milieu. The role of transport in industrial location, regional development and trade patterns; problems of urban transport and Canadian transportation policy issues. (Also listed as Engineering 82.435★.)

Prerequisite: Geography 45.220★ or permission of the Department.

Not offered 1986-87.

**Geography 45.443★**

**Issues in Applied Economic Geography**

A problem-oriented course in the field of economic geography. Topics are drawn from a variety of areas of concern, such as agriculture, resource development, manufacturing and trade.

Prerequisites: Geography 45.340★ and 45.341★ or permission of the Department.

Lectures and seminars three hours a week.

**Geography 45.445★**

**Land Resource Use**

This course examines, from both theoretical and empirical approaches, the nature and problems of man's use of land resources. The emphasis is on the processes, the impacts of urbanization on rural land patterns and on contemporary methods of land evaluation and classification.

Prerequisite: Geography 45.333★ or permission of the Department.

Lectures/seminars three hours a week.

**Geography 45.490★**

**Development of Geographic Thought and Methodology**

The development of ideas and methods in geography. An examination and discussion of original works. Recommended for Honours students.

Prerequisite: Fourth-year standing or permission of the Department.

Lectures three hours a week.

**Geography 45.496**

**Honours Research Project**

Candidates for B.Sc. with Honours in Geography undertake a research project based on a laboratory or field problem. The project is supervised by a member of the department and a written report must be submitted. The candidate may be examined orally on the report.

Prerequisite: Fourth-year standing in the Geography B.Sc. Honours program.

Day division: Hours arranged.

*Supervisor of B.Sc. Honours Studies (co-ordinator)*

Geography 45.499

**Honours Research Essay**

A student in the final year of B.A. Honours or Combined Honours in Geography must write an Honours essay or equivalent. The essay counts as the equivalent of one credit. Students work under an individual faculty adviser. The subject for research is decided upon in consultation with the supervisor.

Prerequisites: Fourth-year Honours standing, Geography 45.398★ and permission of the Department.

Day division: Hours to be arranged with faculty adviser.

*Supervisor of B.A. Honours Studies (co-ordinator)*



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## Officers of Instruction

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### *Chairman*

Robert Gould

### *Professor Emeritus*

E.M. Oppenheimer

### *Professor*

Jutta Goheen

### *Associate Professors*

Joseph B. Dallett

Robert Gould

Basil Mogridge

### *Assistant Professor*

Arnd Bohm

### *Sessional Lecturers*

Sigrid Bostock

Helga Collett

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## General Information

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German language and literature can be seen in various ways: in their historical dimension, with all the wealth of cultural context that that implies; as the subject matter of more theoretical frames of reference such as linguistics or aesthetics; and as contemporary means of communication and illumination. These three approaches all play a part in German studies at Carleton.

The Department's offerings range from German for beginners (one credit or two credits) up to the M.A. program. One can take a single German course, or a sequence, or a whole program (Major or Honours). In the latter case, students often find that to have a twofold specialization (i.e. to take a Combined Major or Combined Honours) suits them. It is also possible, while to some extent specializing in German, to take a sequence of two or three courses in another field, such as economics, or computer science, or another language.

The combinations are many and various, and the Department accommodates both those whose prime objective is practical command of the language (as taught in a university context) and those who wish to study an unusually rich literature.

A number of the Department's courses are taught wholly or partly in German; students may contact the Department to discover the language of instruction in a particular course. In general, it is helpful to both parties if students who, after reading the course descriptions, are in doubt as to which course to take, consult the Department before registration week.

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## Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all departmental regulations and requirements as set out below.

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## Intensive Introductory German

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Students considering beginning the study of German at Carleton should take particular note of German 22.120, Intensive Introductory German (two credits). This course is designed to enable students to reach in one year the level of proficiency normally attained over two years in German 22.115 and 22.150.

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## Undergraduate Programs

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### Core Programs

There are four alternative undergraduate programs, all of which normally include the following core in German:

1. 22.150 Intermediate German A;  
or 22.151 Intermediate German B;  
or 22.120 Intensive Introductory German;
2. 22.201★ Spoken German;  
22.202★ Written German;
3. 22.250 German Literature of the Eighteenth Century.

To that core, students during their program, and in consultation with the Department, add a number of options from German 22.211★, 22.212★, 22.231★, 22.255★, 22.260★ and higher courses. The number of these options to be added to the core varies according to the program.

### Single Major

Core plus three credits (or equivalent including half credits), at least one of them at the 300 level; i.e. six in all.

### Combined Major

Core plus two credits (or equivalent including half credits), at least one of them at the 300 level; i.e. five in all.

### Single Honours

Core plus six credits (or equivalent including half credits), at least one of them at the 400 level; i.e. nine in all.

### Combined Honours

Core plus four credits (or equivalent including half credits), at least one of them at the 400 level; i.e. seven in all.

### All Programs

Students with an advanced knowledge of German will select a suitable course program in consultation with the Chairman of the Department.

A written language test is normally part of the degree requirements; such a test must be completed before graduation.

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## Combined Major Programs

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Combined Majors are possible with a number of other subjects, among them Art History, Music, History, Philosophy, Political Science, Religion, Linguistics, Latin, English, French, Spanish, Italian and Russian. Early consultation with the departments concerned is advised.

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## Combined Honours Programs

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Combined Honours are possible with a variety of subjects. Among the possibilities are German with Art History, Economics, English, French, Geography, History, Italian, Latin, Linguistics, Mathematics, Music, Philosophy, Political Science, Psychology, Russian or Spanish. Early consultation with the departments concerned is strongly advised.

All Honours programs, including Combined ones, are designed to serve, where required, as a basis for further work in German at the graduate level.

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## Related Courses

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In various departments of the University, courses are offered on other aspects of the German-speaking area; these courses cover the past and the present, and include a wide variety of topics in the humanities and social sciences. Students considering a Major or Honours degree in German should not overlook the opportunities present in the University which enable them to add, if they so wish, these additional dimensions to their studies. Conversely, students in disciplines other than German who have a particular interest in Europe and its languages should be aware of the availability to them of the German Department's courses.

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## Other Options for Undergraduate Students

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The attention of Honours students is drawn to the courses offered by the Comparative Literature Committee.

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## Graduate Program

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The Department of German offers studies leading to the degree of Master of Arts. For further details consult the Graduate Studies and Research Calendar.

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## Courses Offered

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### German 22.115

#### **Introductory German**

A beginners' course designed to give a sound grasp of the fundamentals of present-day German. (The facilities of the language learning resource centre are open to students.)

Day and Evening divisions: Four hours a week.

### German 22.116★

#### **Introductory German**

German for students with some previous knowledge of the language. Oral practice and written exercises.

Prerequisite: Placement interview.

Evening division, Fall term: Four hours a week.

### German 22.118

#### **Reading German**

A course for beginners interested in the rapid acquisition of a reading knowledge of German. Grammar; use of dictionaries; basic vocabulary; practice with selected texts from various fields, such as art history, history,

journalism, musicology, and the natural and social sciences.

Day division: Four hours a week.

### German 22.120 (two credits)

#### **Intensive Introductory German**

An intensive course designed to enable students with little or no previous knowledge of German to reach in one year the level of proficiency normally attained over two years in German 22.115 and 22.150. The course thus provides a basis for majoring in German, but enrolment is not restricted to intending Majors. Students not making satisfactory progress will be transferred to the regular introductory course, German 22.115.

Prerequisite: Permission of the Department.

Day division: Eight hours a week.

### German 22.150

#### **Intermediate German A**

Using a number of teaching methods, the course takes students from successful completion of the elementary course to a stage where they are able to express themselves with greater ease in a variety of situations. Material for the course is drawn from several sources, including the press and excerpts from radio programs, and is directed above all towards improved oral competence without, however, neglecting the skills of reading and writing. The course also includes a period during which students choose a topic or area of activity of particular interest, such as politics, travel, university life and, under the supervision of the instructor, develop the vocabulary and skills in order to possess a greater linguistic competence in the selected area.

Prerequisite: German 22.115 or 22.116★ or 22.118 or equivalent.

Evening division: Four hours a week.

### German 22.151

#### **Intermediate German B**

This course pursues objectives similar to those of German 22.150 and is designed for students who enter it with a higher-than-average standing on the elementary level, or with several years of high school or equivalent background. Grammar work and texts are appropriately adapted to this group, which is likely to include declared or prospective Majors.

Prerequisite: Standing of B+ or better in German 22.115 or equivalent.

Day division: Four hours a week.

### German 22.201★

#### **Spoken German**

Work in small groups with special emphasis on comprehension and self-expression in everyday spoken German. Prerequisite: German 22.120 or 22.150 or 22.151 or permission of the Department. (This course is not open to native speakers of German.)

Day division, Fall term: Three hours a week.

### German 22.202★

#### **Written German**

A course parallel to German 22.201★, and emphasizing comprehension and self-expression in written German, by such means as essay-writing and translation into and from German.

Prerequisite: German 22.120 or 22.150 or 22.151, or permission of the Department.

Day and Evening divisions, Fall and Winter terms: Three hours a week.



## German 22.211★

**Descriptive Analysis of Present-Day German I**

Patterns of German word formation and their interaction with syntactic structures. Analysis of text samples from various written sources, some practice in writing short essays in German.

Prerequisites: German 22.120 or 22.150 or 22.151, and Linguistics 29.100 or permission of the Department.

Day division, Winter term: Three hours a week.

## German 22.212★

**Descriptive Analysis of Present-Day German II**

An explication of German sentence structure in the light of current linguistic theories. Text analysis and some practice in writing.

Prerequisites: German 22.120 or 22.150 or 22.151, and Linguistics 29.100 or permission of the Department.

Not offered 1986-87.

## German 22.231★

**Austrian Literature since the 1890s**

Austrian literature, from the final decades of the Habsburg monarchy to the present day, seen in its historical context. Selected works (prose, poetry, plays) by such authors as Schnitzler, Hofmannsthal, Rilke, Trakl, Kafka, Roth, Musil, Jandl, Bernhard, Frischmuth.

Prerequisites: German 22.210 or 22.150 or 22.151 or permission of the Department.

Evening division, Fall term.

## German 22.250

**German Literature of the Eighteenth Century**

The literature of the Enlightenment, Storm and Stress, and Early Classicism, with special emphasis on the works of Lessing, Goethe and Schiller.

Prerequisite: German 22.120 or 22.150 or 22.151 or permission of the Department.

Day division: Three hours a week

## German 22.255★

**Literature of the German Democratic Republic**

Examples of poetry, fiction and drama.

Prerequisite: German 22.120 or 22.150 or 22.151 or permission of the Department. Students who have taken German 22.355★ (no longer offered) may not enrol in German 22.255★.

Not offered 1986-87.

## German 22.260★

**Bertolt Brecht**

A study of theoretical and literary works.

Prerequisite: German 22.120 or 22.150 or 22.151 or permission of the Department. Students who have taken German 22.360★ (no longer offered) may not enrol in German 22.260★.

Not offered 1986-87.

## German 22.301★

**Advanced Spoken German**

Practice of oral comprehension and spoken German in discussions, short presentations and casual talks; based on material (films and texts) illustrating concerns of Post-War Germany.

Prerequisite: German 22.201★ or 22.202★ or permission of the Department.

Day division, Winter term: Three hours a week.

## German 22.302

**Translation**

A course focusing on the principles and practice of translation; exercises with non-literary (including schol-

arly) and literary texts.

Prerequisite: German 22.202★ or 22.211★ or 22.212★ or permission of the Department.

Evening division: Three hours a week.

## German 22.312

**Twentieth-Century German as a Literary Language**

The style of narrative prose from the viewpoint of discourse analysis. Texts by authors such as Rilke, Thomas Mann, Kafka, Christa Wolf.

Prerequisite: German 22.202★ or 22.211★ or 22.212★ or permission of the Department.

Not offered 1986-87.

## German 22.349★ to 22.360★

**Aspects of Modern German Literature (1750-1980)**

Courses concentrate on the development of modern German literature: recurring themes, the history of literary genres, reflections of political forces, and the work of individual authors. Half-credit courses may be offered in either the Fall or Winter term. For details concerning course content, students should consult the Department.

## German 22.349★

**The Perception and Interpretation of Nature from the Eighteenth to the Twentieth Century**

Nature as setting, theme and substance in selected examples from imaginative literature, travel literature and scientific writings. Theory of verse.

Prerequisite: German 22.231★ or 22.250 or 22.255★ or 22.260★ or permission of the Department.

Day division, Winter term.

## German 22.351★

**Citizen, Bourgeois, Philistine**

The literary history of these concepts from Brentano to Barlach.

Prerequisite: German 22.231★ or 22.250 or 22.255★ or 22.260★ or permission of the Department.

Not offered 1986-87.

## German 22.359★

**German Literature Around 1848**

Biedermeier-Vormarz-Jungdeutschland; and authors such as Buchner, Heine, Morike.

Prerequisite: German 22.231★ or 22.250 or 22.255★ or 22.260★ or permission of the Department.

Not offered 1986-87.

## German 22.380

**German Literature in the Twentieth Century**

Representative texts from drama, poetry, and prose fiction in the period from Hauptmann to Grass with emphasis on drama and the theory of drama since the 1920s.

Prerequisite: German 22.231★ or 22.250 or 22.255★ or 22.260★ or permission of the Department.

Not offered 1986-87.

## German 22.401★

**Formal German Speech (Die deutsche Rede)**

A study of the tradition of formal German speech, and practice in oral presentation (Vortrag).

Prerequisite: German 22.301★ or 22.312 or permission of the Department.

Day division, Winter term.

## German 22.412

**History of the German Language**

Significant stages in the development of German: the evolution of its phonetic and grammatical structure, its vocabulary and stylistic norms. The social role of lan-

guage of the twentieth century: language as a means of manipulation (Nazi Germany; advertising), divided German (FRG and GDR); socio-linguistic facets of contemporary literary language.  
Prerequisite: One of German 22.211★, 22.212★, 22.312, 22.430 or permission of the Department.  
Evening division.

German 22.430

**Medieval Language and Literature**

Introduction to Medieval German; Medieval narrative style in heroic epic poetry (*Nibelungenlied*) and early vernacular love poetry (*Minnesang*).  
Prerequisite: German 22.250 or permission of the Department.  
Not offered 1986-87.

German 22.441★

**German Literature of the Sixteenth Century**

Readings in imaginative literature, non-fiction including religious polemics; selected hymns.  
Prerequisite: German 22.250 or permission of the Department.  
Evening division, Winter term.

German 22.442★

**German Literature of the Seventeenth Century**

Readings in the literature of the German Baroque: prose fiction, drama and poetry.  
Prerequisite: German 22.250 or permission of the Department.  
Not offered 1986-87.

German 22.449★

**The Literature of the German Enlightenment**

A study of the literature of the German Enlightenment in its European context.  
Prerequisite: German 22.250 or permission of the Department.  
Not offered 1986-87.

German 22.451★

**Goethe I**

A detailed study of selected works written before 1800.  
Prerequisite: German 22.250 or permission of the Department.  
Not offered 1986-87.

German 22.452★

**Goethe II**

A detailed study of selected works written after 1800.  
Prerequisite: German 22.250 or permission of the Department.  
Not offered 1986-87.

German 22.469★

**Selected Authors of the Nineteenth Century**

A detailed study of works by specific authors such as Fontane or Keller or Kleist. 1986-87: Fontane.  
Prerequisite: German 22.250 or permission of the Department.  
Day division, Fall term.

German 22.470

**Seminar on a Literary or Linguistic Topic**

Not offered 1986-87.

German 22.471★

**Seminar on a Selected Topic**

Prerequisite: Permission of the Department.  
Not offered 1986-87.

German 22.480 to 22.483★

**Twentieth Century Studies**

Specialized literary and linguistic topics focusing on selected periods, literary genres and linguistic phenomena.

German 22.480

**German Drama from the Nineteenth to the Twentieth Century**

Myth in drama. Wagner, Hofmannsthal and Hauptmann.  
Prerequisite: German 22.250 or 22.380 or permission of the Department.  
Not offered 1986-87.

German 22.481

**The German Novel in the Twentieth Century**

A study of selected works, primarily from Döblin to Grass.  
Prerequisite: German 22.250 or 22.312 or 22.380 or permission of the Department.  
Not offered 1986-87.

German 22.482★

**German Short Story and Prose Poem**

"Short prose" since the turn of the century.  
Prerequisite: Permission of the Department.  
Not offered 1986-87.

German 22.483★

**Language and Society in Twentieth-Century Germany**

Language as a means of manipulation; divided German; socio-linguistic aspects of contemporary literary language. The course concentrates on one of these aspects. For specific information the student should consult the Department.  
Not offered 1986-87.

German 22.490★

**Tutorial on a Selected Topic**

Primarily for Honours students in their final year. A genre, an author or a group of authors is selected; methods of literary criticism are considered.

German 22.491

**Tutorial**

As above, but offered for full credit, with a corresponding enlargement of scope and assignments.

German 22.499

**Honours Essay**

An option for final-year Honours students.



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## Officers of Instruction

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### Chairman

R.C. Elwood

### Professors

J.G. Bellamy

J.L. Black

Desmond G. Bowen

Gordon S. Couse

R.C. Elwood

David M.L. Farr

Naomi E.S. Griffiths

J.K. Johnson

R.A. Jones

H.A. MacDougall

A.B. McKillop

S.R. Mealing

Paul C. Merkley

H. Blair Neatby

Mark Phillips

John W. Strong

Michael J. Sydenham

S.F. Wise

### Associate Professors

Marilyn J. Barber

B. Carman Bickerton

R.T. Clippingdale

J. Nicoll Cooper

E.P. Fitzgerald

Robert B. Goheen

G.F. Goodwin

Deborah Gorham

F.J.K. Griezic

Peter J. King

D.A. Muise

John H. Taylor

### Adjunct Professors

W.A.B. Douglas

Toby Gelfand

G.N. Hillmer

M.W. Labarge

D.C. Savage

### Sessional Lecturers

J. Barbier

J. Fedorowicz

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## Programs of Study

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All students who elect History as a Major or Honours subject, or who undertake graduate work in History, will plan the whole of their program in consultation with a departmental program adviser whose approval is necessary each academic year before registration is complete. Departmental advisers for students in History programs are:

*Major students*, J.H. Taylor, H.A. MacDougall

*Honours students*, G.F. Goodwin

*Graduate students*, J.K. Johnson, D.A. Muise

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## Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all departmental regulations and requirements as set out below.

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## Major Programs

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### Major in History

1. Students majoring in History are to take a minimum of six History credits as follows:

- (a) one 100-level credit, to be taken in the First year;
- (b) at least two 200-level credits, to be completed by the end of the Second year. A third 200-level credit is usually recommended;
- (c) at least two 300-level credits, to be taken in the Third year. The Department may permit a third 300-level credit in lieu of a third 200-level credit.

2. The courses offered at the 200 and 300 levels generally fall into the following four fields:

- (a) ancient, medieval and early modern Europe;
- (b) modern Europe;
- (c) North America;
- (d) European expansion and the non-Western world.

Students majoring in History are required to take at least one credit in three of the four fields. History 24.388 may not be used to satisfy this field requirement except in extraordinary cases and with the permission of the Department.

In order to continue in the Major program, a student must attain a grade of C- or better in a 100-level history course and must maintain at least a C- average over all history courses taken.

### Combined Majors

For Major programs combining History with another subject, the general rule is that they must include at least four credits in History, no more than one of these four at the 100 level and at least one of them at the 300 level.

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## Honours Program

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### Honours in History

1. The Honours program requires 11 credits in history:

- (a) one 100-level credit, to be taken as part of the First year;
- (b) two 200-level credits, to be taken in the Second year;
- (c) three 300-level credits, to be taken in the Third year and to include History 24.388;
- (d) three 400-level seminar credits to be taken in the Fourth year. Not more than two seminars may be taken in any one of the following fields:
  - (i) medieval and early modern Europe;
  - (ii) modern Western Europe;
  - (iii) Russia and Eastern Europe;
  - (iv) Great Britain and the Commonwealth;
  - (v) Canada;
  - (vi) United States.

One of these seminar credits may, with departmental approval, be taken in a discipline other than History. Students choosing this option will be required to present only ten history credits. A student may elect to present a research essay (History 24.499) in place of any two 400-

level seminars;

(e) History 24.490 and History 24.491 to be taken in the Fourth or final year.

2. The courses offered at the 200 and 300 levels generally fall into the following four fields:

(a) ancient, medieval and early modern Europe;

(b) modern Europe;

(c) North America;

(d) European expansion and the non-Western world.

Honours students in their first three years are required to take at least one credit in three of the four fields. History 24.388 may not be used to satisfy this field requirement except in extraordinary cases and with the permission of the Department.

Students are required to show a proficient reading knowledge of French. Students may substitute another language, with the permission of the Department, if it is more appropriate to their program.

Students intending to enter the Honours program are advised to do so as early as their intentions are settled, and not later than the beginning of the Third year. All students who meet the general University Honours requirements, and who have a grade-point average of at least 6.0 in History, will be admitted to, and permitted to continue in the Honours program. Other applicants will be given individual consideration on application to the Department.

Honours students in good standing may revert to the Major program with a B.A. at the end of the Third year. Students who have not taken History 24.388 in their Third year will require the permission of the Department to enter the Fourth year. In determining the class of an Honours candidate's degree, the Department will average the grades on all history credits, those in the 400-level courses being given double weight.

There is no limit to the number of qualified students admitted to the Fourth year of the Honours program; however, allocation of students among the 400-level seminars will be determined by the Department after consultation with individual students. For details, consult the Honours adviser. This regulation will not be applied in such a way as to limit a student's opportunity to complete requirements prescribed for a degree in History.

### Combined Honours Programs

Students combining History with another subject will be expected to meet the language requirement of the Department (see foregoing, *Honours in History*), and to complete at least six credits in History. Only one of these six credits may be taken at the 100 level and at least one must be at the 300 level. The program must include two History credits at the 400 level, one of which must be a seminar.

### Cross-Listed Courses

The Department of History cross-lists several courses offered by other departments (e.g., several Classical Civilization courses in the Department of Classics). No more than two credits in cross-listed courses may be included in the six credits required for the Major program or the four credits required in Combined Majors. No more than three full credits in cross-listed courses may be included in an Honours or Combined Honours program.

### Prerequisites

Unless otherwise stated, the prerequisite for any 300-level course is:

1. A 200-level course, preferably in an appropriate field (for fields, see *Major in History*, paragraph 2); or

2. Permission of the Department.

The prerequisite for any 400-level course is:

1. Two 300-level courses, with one course at either the 200 or 300 level in an appropriate field; or

2. Permission of the Department.

### Courses Offered

#### History 24.100

##### Turning Points in Modern History

Introductory seminars emphasizing the development of writing, research and analytical skills through the intensive examination of selected topics in modern history (e.g., the Italian Renaissance, the French Revolution, the impact of science, industrialization, the origins of the world wars). The numbers in each seminar will be kept small in order to provide an opportunity to work closely with individual faculty members. Orientation of the course might prove inappropriate for Second- and Third-year students. Consultation is advised.

Day and Evening divisions: Three hours a week.

M. Phillips (Co-ordinator), B.C. Bickerton, F.J.K. Griezic, N.E.S. Griffiths, P.C. Merkley, J.H. Taylor

#### History 24.101

##### History of Western Civilization

A survey of the major events, ideas and movements that have shaped western civilization from the fall of Rome to the twentieth century.

Day division: Three hours a week.

J.G. Bellamy (Co-ordinator), H.A. MacDougall

#### History 24.102

##### The World in the Twentieth Century

An introduction to the ideologies, political movements, economic forces and international conflicts that have shaped the contemporary world. This course is designed primarily for students who do not plan to Major in History.

Day and Evening divisions: Three hours a week.

G.N. Hillmer

#### History 24.205

##### England During the Middle Ages

A study concentrating on the political development of medieval England and her French possessions, A.D. 1066-1485.

Day division: Three hours a week.

J.G. Bellamy

#### History 24.210

##### Introduction to the History of Ideas

A study of Western intellectual development since the Renaissance which considers such movements as humanism, the Enlightenment, romanticism, Darwinism and contemporary ideologies.

Day division: Three hours a week.



History 24.215

**Renaissance Europe**

The political and cultural history of Europe in the fourteenth, fifteenth and sixteenth centuries, with emphasis on the Italian Renaissance and its diffusion into England and France.

Day division: Three hours a week.

*M. Phillips*

History 24.220

**Europe in the Era of the World Wars**

The political and economic history of Europe in the period 1914-45, with particular attention to the development of the totalitarian regimes.

Day division: Three hours a week.

*E.P. Fitzgerald*

History 24.224

**The Revolutionary Tradition in Europe, 1789-1900**

Beginning with the French Revolution of 1789, the course includes such significant movements as romanticism, nationalism, the rise and implications of industrialism, and the development of socialist theory culminating in Marxism.

Not offered 1986-87.

History 24.230

**Canada from 1763**

The political, economic and social development of the British North American colonies of 1763 to the Canada of today. Recommended as the introductory course in Canadian history for Majors and Honours History students. Credit will not be granted for both History 24.230 and 24.231.

Day division: Three hours a week.

*M.J. Barber, D.A. Muise*

History 24.231

**Historical Introduction to Modern Canada**

A study of the political, economic and social development of modern Canada. The course provides a survey of Canadian history since 1760, but the emphasis is on the developments in the twentieth century. Recommended for students who are not majoring in History. Credit will not be granted for both History 24.230 and 24.231.

Evening division: Three hours a week.

*J.K. Johnson, H.B. Neatby*

History 24.236

**The Spanish and English Colonies in North America**

A comparative study of the development of the English North American colonies and New Spain (Mexico), with emphasis on settlement, social patterns and institutions, the frontier, native peoples and the emergence of a colonial sense of identity.

Day division: Three hours a week.

*P.J. King*

History 24.237

**The History of Latin America**

A survey of the political, economic, and social development of Latin America from the colonial era to the twentieth century, with particular emphasis on Mexico, Argentina, and Brazil.

Evening division: Three hours a week.

*J. Barbier*

History 24.240

**History of the United States of America**

A survey of United States politics and society since the American Revolution.

Day division: Three hours a week.

*G.F. Goodwin, P.J. King*

History 24.250

**Modern England, 1460-1960**

A survey of significant political and social developments in England from the mid-fifteenth to the mid-twentieth century.

Day division: Three hours a week.

*R.B. Goheen*

History 24.256

**Comparative History of England and France**

A comparison of political and social developments in two major Western European countries, from the seventeenth to the nineteenth century.

Not offered 1986-87.

History 24.260

**History of Russia and the U.S.S.R.**

A survey of Russian history from Kiev to the present, with emphasis on the period from the reign of Peter the Great to the Revolution of 1917.

Day division: Three hours a week.

*R.C. Elwood*

History 24.270

**European Economic History**

A study of the material foundations of western civilization in the modern period, with emphasis on comparative patterns of national economic development and international economic rivalry. (Prior knowledge of economic theory is not a prerequisite.)

Evening division: Three hours a week.

*E.P. Fitzgerald*

History 24.271

**The Expansion of Europe Overseas**

A survey of Europe's commercial and colonial expansion since the fifteenth century, with emphasis on the debate over the economic causes and consequences of colonialism.

Not offered 1986-87.

History 24.275

**History of Africa**

An introduction to the history of Africa. The first half is devoted to the period prior to European colonization with emphasis on West African states and empires; the second half deals with resistance to colonization, European colonial rule, independence and liberation movements.

Not offered 1986-87.

History 24.278

**The Middle East: 1798 to the Present**

Offered in the Department of Religion as Religion 34.278.

History 24.280

**The Diplomatic History of Europe, 1815-1914**

A survey of diplomatic history from the Congress of Vienna to the outbreak of the First World War.

Day division: Three hours a week.

*R.A. Jones*

History 24.285

**History of China**

A survey of Chinese political and intellectual history from the Xia Dynasty to the 1911 Revolution. Emphasis is placed on the impact of the West on China from the

sixteenth to the twentieth century.  
Day division: Three hours a week.  
*J.W. Strong*

History 24.290

**History of Ancient Greece**

Offered in the Department of Classics as Classical Civilization 13.290.

History 24.291

**History of Ancient Rome**

Offered in the Department of Classics as Classical Civilization 13.291.

History 24.309★

**Studies in Greek History and Institutions**

Offered in the Department of Classics as Classical Civilization 13.321★.

History 24.311★

**Studies in Roman History and Institutions**

Offered in the Department of Classics as Classical Civilization 13.322★.

History 24.312★

**The Italian Renaissance**

Studies in political, social and intellectual history, concentrating on Florence and Venice. Readings are in both primary and secondary works. Some representative themes are: Florence and Venice compared; the family and the individual; humanism and the city.  
Day division, Winter term: Three hours a week.

History 24.313★

**Historical Writing and Political Thought in Renaissance and Reformation Europe**

This course examines a series of political and historical thinkers in relation to early modern society. Special attention is given to the evolution of historical narrative.  
Not offered 1986-87.

History 24.314★

**Studies in Ancient History and Institutions**

Offered in the Department of Classics as Classical Civilization 13.323★.  
Not offered 1986-87.

History 24.316

**The Era of the French Revolution, 1776-1815**

A study of the transformation of Old France into a modern nation during the Revolutionary and Napoleonic period and of its rivalry with Britain at that time. The theme of the course is the development of conflict, both political and martial, arising from differing concepts of freedom.  
Not offered 1986-87.

History 24.321

**The Enlightenment**

A study in eighteenth-century reformist thought with particular attention given to the French *philosophes*. Their contribution to the French Revolution and the emergence of an anti-Enlightenment reaction are considered.  
Not offered 1986-87.

History 24.323

**Religion and the State, Europe 1815-1965**

A study of selected problems in modern religious history from the end of the French Revolution to Vatican Council II. Areas to be represented include the rise and decline of

liberal Catholicism, the Oxford movement, Christian Socialism, Bismarck and the churches, the growth of anti-Semitism, Zionism, Vatican Council II.  
Day division: Three hours a week.  
*H.A. MacDougall*

History 24.324

**Colonial Frontier Societies**

An examination of four or five frontier societies in the eighteenth and nineteenth centuries, most of them Canadian, in which the presence of either European or North American metropolitan influences were critical to the character of development.  
Day division: Three hours a week.  
*B.C. Bickerton*

History 24.326★

**Canada Before and After the Conquest**

An examination of *Canadien* society from 1730 to 1774.  
Day division, Winter term: Three hours a week.  
*B.C. Bickerton*

History 24.327★

**Introduction to Local History**

An examination of the methods and approaches that characterize recent British, French and North American writing on local history.  
Not offered 1986-87.

History 24.328★

**Eastern Ontario Communities**

The local history of Eastern Ontario, with particular reference to the settlement and development of the Ottawa Valley in the nineteenth century.  
Prerequisite: History 24.327★ or permission of the Department.  
Not offered 1986-87.

History 24.329★

**Canadian Urban History**

An introduction to urban growth and development in Canada. The course considers the historical basis of the urban pattern and its influence in Canada, and the internal structure and institutions of Canadian cities. In particular, Ottawa is used as a case study for classroom and research purposes.  
Day division, Winter term: Three hours a week.  
*J.H. Taylor*

History 24.330★

**Social History of Canada**

Studies in the structure and values of Canadian societies from the eighteenth to the early twentieth centuries.  
Not offered 1986-87.

History 24.331★

**French Canada Since Confederation**

A political and intellectual history of French Canada with emphasis on the development of French Canadian nationalism.  
Day division, Winter term: Three hours a week.  
*H.B. Neatby*

History 24.332★

**The Atlantic Provinces**

Selected periods in the history of the four Atlantic Provinces. Themes covered include: settlement and population; economic trends; religious and cultural development; social and political evolution.  
Day division, Winter term: Three hours a week.  
*D.A. Muise*



History 24.333★

**Upper Canada and Ontario**

An introduction to the economic, social and political development of Upper Canada and Ontario in the eighteenth and nineteenth centuries.

Day division, Fall term: Three hours a week.

*J.K. Johnson*

History 24.334★

**Canada-United States Relations**

An examination of Canada-United States relations, with particular attention to the relationship in the twentieth century.

Not offered 1986-87.

History 24.335★

**Canadian Labour Movements since Confederation**

A study of workers' responses to the evolving Canadian capitalist system.

Day division, Fall term: Three hours a week.

*F.J.K. Griezic*

History 24.336★

**Canadian External Relations**

The development of Canadian attitudes and policies toward external affairs in the years since 1867, with particular emphasis on the twentieth century.

Day division, Fall term: Three hours a week.

*H.B. Neatby*

History 24.337

**The Emergence of the Political Tradition in Canada**

An examination of Canadian politics (politicians, parties, ideas and social context) from the late eighteenth century to the present. Special emphasis is given to the post-Confederation period.

Day division: Three hours a week.

*R.T. Clippingdale*

History 24.338★

**Canadian Immigration and Settlement**

A study of immigration to Canada and of the adaptation of immigrants to their new environment from the beginning of the nineteenth century to the Second World War.

Evening division, Fall term: Three hours a week.

*M.J. Barber*

History 24.339★

**History of Western Canada**

An introduction to the economic, social and political evolution of the four westernmost provinces from European penetration to the present.

Not offered 1986-87.

History 24.340★

**History of Canadian Socialism, 1890-1976**

A history of the local, regional and national origins, evolution, schisms, vicissitudes of socialist practice and ideology in Canada in the twentieth century.

Day division, Winter term: Three hours a week.

*F.J.K. Griezic*

History 24.341★

**The American Revolution**

A study of the causes and course of the movement leading to the independence of the United States. Particular emphasis is given to ideology, society, local issues and revolutionary organization.

Day division, Winter term: Three hours a week.

*P.J. King*

History 24.343★

**The United States in the Twentieth Century, I, to 1940**

Some principal themes in the history of the United States from the progressive era to the conclusion of the New Deal era.

Evening division, Winter term: Three hours a week.

*P.C. Merkley*

History 24.344★

**The United States in the Twentieth Century, II, since 1940**

Some principal themes in the history of the United States since the New Deal era.

Not offered 1986-87.

History 24.347★

**The Negro in the United States**

A study of the Negro in the United States, which concentrates on his experience under slavery and the recurring themes of integration and separatism after emancipation.

Day division, Fall term: Three hours a week.

*G.F. Goodwin*

History 24.348

**American Intellectual History**

An examination of American thought from the colonial period to the twentieth century, with emphasis on political, social and religious ideas and their relation to American society and institutions.

Day division: Three hours a week.

*P.J. King*

History 24.349★

**History of United States Foreign Policy since 1865**

A study of the emergence of the United States as a world power in its international and domestic context, with emphasis on the twentieth century.

Evening division, Winter term: Three hours a week.

*G.F. Goodwin*

History 24.350

**Modern British and Canadian Constitutional History**

A survey of themes in the constitutional development of Britain since 1688 and Canada since 1763.

Not offered 1986-87.

History 24.354

**Women and Society: 1700 to the Present**

An examination of the changes that have taken place in the position of women since the eighteenth century and the relationship of these changes to other social, economic and intellectual developments. The course deals with developments in Canada, Western Europe and the United States.

Day division: Three hours a week.

*M.J. Barber*

History 24.358

**Politics and Society in England circa 1500-1850**

An enquiry into the relationship between society and politics in England.

Day division: Three hours a week.

*R.B. Goheen*

History 24.360

**History of the U.S.S.R.**

A history of the politics, diplomacy, culture and society of Soviet Russia from 1917 to the present.

Evening division: Three hours a week.

*J. Fedorowicz*

History 24.361★

**The Russian Empire**

The expansion and development of the Russian Empire from the fourteenth century to 1917, with emphasis on Siberia and Central Asia.

Not offered 1986-87.

History 24.365★

**The Soviet Union in International Affairs from Comintern to Cold War**

A study of Soviet diplomatic activity and foreign policy principles from the founding of Comintern in 1919 to the fall of Khrushchev in 1964. Attention will be spread evenly over four units of study: Comintern and World Revolution (1919-28); Socialism in One Country (1929-43); Origins of the Cold War (1943-48); Global Concerns and Peaceful Co-existence (1948-64).

Not offered 1986-87.

History 24.366★

**Modern East Central Europe**

A study of the political and diplomatic history of East Central Europe since 1848 with emphasis on Poland and Czechoslovakia.

Not offered 1986-87.

History 24.371★

**The International Economy and National Development**

The growth of the international economy and its influence on the historical development of selected European, European-settled, and third world countries since the sixteenth century. (Prior knowledge of economic theory is not a prerequisite.)

Not offered 1986-87.

History 24.372★

**North Africa and the Near East in the Era of Western Dominance**

A study of how Europe established political, economic and cultural dominance over the Muslim states of the Mediterranean basin; and how the colonial regimes implanted there subsequently developed and were eventually overthrown. Themes include imperial rivalry and conquest, indigenous collaboration and resistance, the economic and social impact of Western domination.

Not offered 1986-87.

History 24.377

**The Irish in Modern History: A Problem in Historical Ethnicism**

A study of the development of the two peoples of Ireland, Anglo-Irish relations since Elizabethan times, the influence of the diaspora Irish in home affairs, and the contribution of the Irish to developments in England, Canada, the United States and other areas. Particular attention is paid to the problem of religion in Irish affairs.

Not offered 1986-87.

History 24.378★

**The Reformation Era in European History, 1409-1648**

A study of the papacy and the reformed churches, from the Council of Pisa to the Treaty of Westphalia. The radical changes in the relationship between church, state, and society in Western Europe during this period are examined. (Also listed as Religion 34.378★.)

Evening division, Fall term: Three hours a week.

History 24.380

**International History, 1914-1956**

A survey of international history in the First World War; peacemaking 1919-1923; inter-war diplomacy and the

origins of the Second World War; the relations of the powers in the Second World War; and post-war relations and the Cold War.

Evening division: Three hours a week.

History 24.385★

**Twentieth-Century China**

A political history of China from the 1911 Revolution to the present. Emphasis is placed on the development of Chinese communism and the Peoples Republic since 1949.

Day division, Fall term: Three hours a week.

*J.W. Strong*

History 24.386★

**Modern Japan**

The political, social and economic development of Japan during the Meiji, Taisho and Showa periods.

Day division, Winter term: Three hours a week.

History 24.388

**Historical Theory and Method**

An examination of questions concerning the nature and value of historical enquiry and the meaning of the course of history.

Day division: Three hours a week.

*M. Phillips*

History 24.405

**Selected Problems in Medieval History**

A seminar on one or more of the following topics: crime and criminal law in medieval England, heresies and social movements, apocalyptic speculation.

Day division: Three hours a week.

*J.G. Bellamy*

History 24.412

**Machiavelli and His Age**

An intensive examination of Machiavelli's political, historical, military, diplomatic, literary and personal writings. His life and thought are explored in the context of the political, intellectual, and social issues that confronted Italians in the late Renaissance. Representative topics include: ancient political thought, the Florentine historiographical tradition, the role of the Papacy in Italian politics, the influence of Venice.

Day division: Three hours a week.

*M. Phillips*

History 24.416

**The French Revolution**

A seminar in selected problems in the history and interpretation of the French Revolution, with particular reference to the development of different concepts of democracy.

Not offered 1986-87.

History 24.429

**Selected Topics in Greek and Roman History**

Intended for Honours students in Classics or History in their Third or Fourth year. (Offered in the Department of Classics as Classical Civilization 13.429.)

History 24.430

**The Formation of the British North American Societies, 1760-1848**

The formation and consolidation of colonial societies from a variety of comparative perspectives are featured. Immigration, political evolution and economic develop-



ment are explored.

Day division: Three hours a week.

*J.K. Johnson*

History 24.431

**The Making of the Nation, 1849-1896**

The political, economic, social and intellectual transformation of British North America into the Dominion of Canada is examined.

Not offered 1986-87.

History 24.432

**Acadian History, 1604-1967**

An examination of the establishment of European settlement in "Acadie" or Nova Scotia, the development of Acadian traditions pre- and post-1755, including the Acadian reaction to exile, emphasizing community development and Acadian social characteristics to the present day. Considerable emphasis is placed upon the use of documentary material.

Not offered 1986-87.

History 24.437

**The National Experience, Canada, 1896-1939**

Patterns of political, economic, social and intellectual change will be explored. Attention is devoted to such themes as class, ethnicity, feminism, regionalism and nationalism.

Day division: Three hours a week.

*H.B. Neatby*

History 24.439

**Modern Canada, 1939-1976**

Selected aspects of Canadian industrialization, urbanization, unionization, federalism, regionalism, feminism and nationalist ideologies.

Evening division: Three hours a week.

*F.J.K. Griezic*

History 24.440

**A Selected Period in United States History**

A seminar that considers the relationship among the political, social, economic and intellectual aspects of one of the following periods: (a) the early national period, 1783-1816; (b) the age of Jackson, 1824-46; (c) the progressive era, 1896-1912; (d) the interwar years, 1920-41; (e) since 1941. For 1986-87 the period will be: (d).

Day division: Three hours a week.

*G.F. Goodwin*

History 24.442

**North American Colonial Rebellions and Independence Movements, 1675-1837**

A study of North American colonial societies through a comparative treatment of various aspects of insurrections and independence movements within the North American colonies of Great Britain and Spain from the late seventeenth to the early nineteenth centuries. The topics considered are selected from such occurrences as Bacon's Rebellion, Leisler's Rebellion, the Regulators, the American Revolution, the Mexican War of Independence and the Canadian Rebellions of 1837.

Not offered 1986-87.

History 24.443

**The Religious Factor in the History of the United States**

A study of the role played by religious faith in the history of the United States, with special emphasis on political activities, the public philosophy, public policy and the American concept of national destiny.

Day division: Three hours a week.

*P.C. Merkley*

History 24.457

**Selected Problems in Tudor and Stuart History**

A seminar concentrating on aspects of English group and community organization and power in the Tudor and early Stuart period.

Day division: Three hours a week.

*R.B. Goheen*

History 24.458

**Selected Problems in Nineteenth-Century British History**

A seminar on mid-nineteenth-century social reform and its social background.

Evening division: Three hours a week.

*D. Gorham*

History 24.459

**Selected Problems in the History of Women and the Family: from the Industrial Revolution**

A seminar on selected problems relating to the changes in women's lives and in the structure of the family that have occurred since the eighteenth century. The course is concerned with one or more of the following issues: women's changing work patterns; the rise of the women's movement; changing attitudes towards childhood; changing views of sexuality. While the main focus is on Britain, North American and European experience is also examined, for comparative purposes.

Not offered 1986-87.

History 24.460

**Selected Problems in Russian History**

A seminar on selected problems relating to the expansion and decline of Imperial Russia.

Day division: Three hours a week.

*R.C. Elwood*

History 24.461

**Selected Problems in Soviet History**

A seminar on selected problems relating to the establishment and subsequent course of the Soviet Union.

Not offered 1986-87.

History 24.470

**Selected Problems in the History of European Expansion**

A seminar on the political economy of imperial rivalry and colonial rule in a selected historical period.

Not offered 1986-87.

History 24.480

**Selected Problems in the Diplomacy of the Great Powers, 1906-39**

A seminar on selected problems in diplomatic history from the origins of the First World War.

Evening division: Three hours a week.

*R.A. Jones*

History 24.481

**Diplomatic and Strategic Problems of the Second World War**

A seminar on problems selected from major politico-strategic issues of the outbreak, conduct and aftermath of the Second World War.

Not offered 1986-87.

History 24.490

**Honours Comprehensive**

A written examination, required of candidates for Honours in History and taken in the Fourth or final year. The

examination deals with general questions of historical interpretation arising from the Fourth-year seminars and History 24.491.

Day and Evening divisions.

History 24.491

**Directed Studies**

A course required of candidates for Honours in History which is taken in the Fourth or final year. It includes supervised reading and written reports in an area of history.

Day and Evening divisions.

History 24.499 (2 credits)

**Honours Research Essay**

Open to candidates for Honours in History in their Fourth year with the permission of the Department. *B+* standing in History courses is expected. The subject for research is settled in consultation with the department and a supervisor will be assigned. A written outline of the project must be submitted to the Honours Committee one week before the last day for course changes. The candidate will be orally examined upon the essay after presentation. This course carries double credit.

Day division.

**Courses Planned for Evening Division**

Each year the Department of History offers a wide selection of courses in the Evening division at the 100, 200 and 300 levels which are as representative as possible of the fields required for the B.A. degree. At least two 400-level seminars are also offered annually in the Evening.



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## Humanities

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### Humanities 10.100

An examination of selected works, from Biblical times to the present, illustrating the various dominant views on the nature of humanity and attempts to understand people and their environment.

Prerequisite: First-year standing or higher.

Not offered 1986-87.

### Humanities 10.200★

An examination of selected works illustrating various dominant views on the nature of humanity and attempts to understand the world in the context of the twentieth century as seen from points of view of history, philosophy, social science and literature.

Prerequisite: Second-year standing or higher.

Not offered 1986-87.

Offered Summer 1986.

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## Arts and Social Sciences

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### Arts and Social Sciences 04.288

#### **Introduction to Women's Studies**

A survey course, designed to increase the student's understanding of the position of women in contemporary society. The course offers an introduction to such issues as biological and cultural sex differentiation, women and literature, women and religious institutions, women and politics, women and social and health services and women and the law. A brief introduction to the intellectual and social origins of feminism and a survey of women's place in Western European history provides a context for examining women's position in contemporary society. Evening division: Lectures and discussion three hours a week.

### Arts and Social Sciences 04.390

#### **The Literature of Existentialism**

A study of the origins, development, and principal characteristics of existentialist literature. (Also listed as English 18.390.)

All assigned readings will be in English.

Prerequisite: Permission of the Department of English.

Day division: Lectures two hours a week.

*B.W. Jones*

### Arts and Social Sciences 04.395

#### **Visual and Performing Arts in the Twentieth Century**

This interdisciplinary course is designed to examine selected aspects of the creation, distribution and reception of the arts in this century. The focus of the course is on the interplay of aesthetics, ideology and technology in music, theatre, film, art and architecture.

Prerequisite: Third-year standing and permission of the Fine Arts Committee (see p. 396).

### Arts and Social Sciences 04.491★

#### **Selected Topics in Women's Studies I**

Selected problems in the field of women's studies, not ordinarily treated in other course programs.

Prerequisite: Permission of the Interfaculty Committee on Women's Studies.

Seminar three hours a week.

### Arts and Social Sciences 04.492★

#### **Selected Topics in Women's Studies II**

Selected problems in the field of women's studies, not ordinarily treated in other course programs.

Prerequisite: Permission of the Interfaculty Committee on Women's Studies.

Seminar three hours a week.

### Arts and Social Sciences 04.498

#### **Honours Essay**

A required interdisciplinary research essay for Honours students in the Fourth year of Directed Interdisciplinary Studies. The project is carried out by the student in consultation with a faculty supervisor. The project must be approved in advance by the Committee on Directed Interdisciplinary Studies; students must consult with the Program Co-ordinator in selecting a project and a supervisor. At least one week before the last day for course changes, students must submit to the Program Co-ordinator a written outline of the proposed study, approved by the supervisor. Arts and Social Sciences regulations governing Honours Theses and Research Essays apply to this project, which is equivalent to one credit.

Registration in this course is limited to students in the Fourth year of the B.A. (D.I.S.) Honours program.

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## Science

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### Science 60.100

#### **Man in His Environment**

This course is designed to acquaint students in Arts, Social Sciences and Engineering, with the methodology of science in approaching a problem. The historical aspects of scientific discoveries are examined, particularly those that influence present society. A special emphasis is directed to the interactions of science and society and to man's influence and impact on the natural environment.

Not offered 1986-87.

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## Technology, Society, Environment Studies

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Our society increasingly faces problems requiring communication among specialists of different disciplines. This is at least in part a result of increasing specialization of people and jobs. The multidisciplinary problems raised by the interaction of an industrial society with its environment, its resource base, and its complex technical systems are addressed by five courses organized by the Technology, Society, Environment Committee. These courses develop the multidisciplinary perspective through problem units on topics including energy, the industrial revolution, pollution, transportation, political regulation of technology, forecasting of technological and social change, technological innovation and the arms race. Each course involves team projects that bring together students working in different disciplines. The five courses are Technology, Society, Environment 59.300, 59.401★, 59.402★, 59.403★ and 59.404★. They are described on pp. 403-404.

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**Other Courses**

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African Studies, see p. 394.  
Asian Studies, see p. 395.  
Fine Arts, see p. 396.  
Integrated Science Studies, see p. 397.  
Labour Studies, see p. 400.  
Medieval Studies, see p. 402.  
Urban Studies, see p. 405.  
Women's Studies, see p. 406.

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**Directed Interdisciplinary Studies, B.A.**

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For information about the B.A. Directed Interdisciplinary Studies program see p. 122.



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## Officers of Instruction

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### *Chairman*

M. Ciavolella

### *Professor*

M. Ciavolella

### *Associate Professors*

F. Loriggio

C.P. Haines

### *Assistant Professor*

G. Panico

### *Supervisors of Majors and Honours Studies*

M. Ciavolella

G. Panico

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## General Information

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Several program and course changes were implemented in the academic year 1984-85. Students enrolled in an Italian degree program before that year should direct their enquiries to the Majors or Honours supervisor before registration.

The Department of Italian offers a varied and flexible undergraduate program, which has been designed to comply with a range of academic and professional interests. The program offers courses and tutorials in language, literature and cultural studies, and it includes some options for translation training.

The minimum credit requirements for a degree in Italian, after the completion of Italian 26.100 or the equivalent are as follows: Major: six; Combined Major: five; Combined Honours: seven.

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## Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all departmental regulations and requirements as set out below.

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## Major Programs

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The requirements for the Major in Italian after the completion of a 100-level credit or the equivalent are Italian 26.200, 26.240, 26.260, 26.300, 26.340 and one tutorial credit. The course pattern may be varied for students who come into the program with advanced standing in Italian.

The requirements for the Combined Major in Italian after the completion of a 100-level credit or the equivalent are 26.200, 26.240, 26.260, 26.300 and one additional credit at the 300 level (a course or a tutorial). The course pattern may be varied for students who come into the program with advanced standing in Italian.

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## Combined Honours Program

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The minimum requirements for the Combined Honours in Italian after the completion of a 100-level credit or the equivalent normally include Italian 26.200, 26.240, 26.260, 26.300, 26.340 and two tutorial credits, one of which must be at the 400 level. The course pattern may be varied for students who come into the program with advanced standing in Italian.

The Combined Honours program is available in Italian and other disciplines. The program must be arranged with both Honours advisers concerned.

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## Departmental Tutorial Program

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Students registered in Combined Honours and Major programs in Italian and students with specialized interests in Italian studies, should examine the tutorials that the Department offers in the areas of language, literature, cultural studies and translation. The tutorials are conducted on a one-to-one basis or in small study groups. Enquiries about the selection of tutorials should be directed to the Chairman.

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## Courses Offered

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### Italian 26.100

#### **Introductory Italian**

A course designed to introduce the student to the acquisition of Italian. Understanding, speaking, reading and writing.

Precludes additional credit for Italian 26.105★ and/or 26.110★.

Day and Evening divisions: Three hours a week and one hour practice in the laboratory.

### Italian 26.105★

#### **Spoken Italian I**

A beginners' course designed to enable students to acquire a fundamental use of spoken language. One section may be reserved for Third-year architecture students planning a term in Italy.

Precludes additional credit for Italian 26.100.

Day or Evening division, Fall or Winter term: Three hours a week and one hour practice in the laboratory.

### Italian 26.106★

#### **Spoken Italian II**

A sequel to Italian 26.105★. This course is essentially oriented towards oral communication.

Prerequisite: Italian 26.105★, or permission of the Department.

Day or Evening division, Fall or Winter term: Three hours a week, and one hour practice in the laboratory.

### Italian 26.110★

#### **Written Italian**

A beginners' course designed to provide the student with the basic elements of Italian structures. Grammar, practice in writing and reading.

Precludes additional credit for Italian 26.100.

Day division, Winter term: Three hours a week.

Italian 26.200

**Intermediate Italian**

A sequel to Introductory Italian. Speaking, reading, writing, understanding, and using the language as a means for self-expression. A course intended to lead to the comprehension and enjoyment of Italian texts.

Prerequisite: Italian 26.100 or equivalent; or Italian 26.105★ and 26.110★.

Day and Evening divisions: Three hours a week and one hour practice in the laboratory.

Italian 26.206★

**Italian Conversation**

Conversation and discussion of general and current problems, including occasional written work.

Prerequisite: Italian 26.100, or Italian 26.105★ and 26.106★.

Day division, Winter term: Three hours a week.

Italian 26.240

**Introduction to Italian Literature**

A course designed for students who intend to enter a Major or a Combined Major program in Italian. Textual analysis of representative works.

Prerequisite: Italian 26.200 or permission of the Department.

Day division: Three hours a week.

Italian 26.260

**Introduction to the Culture of Italy**

This course, taught in English, traces the major developments of Italian culture. Emphasis is placed on art, literature, music, theatre and cinema. Students enrolled in degree programs in Italian will be asked to complete assignments in Italian.

Day division: Three hours a week.

Italian 26.300

**Advanced Italian**

A sequel to Intermediate Italian. Defined points of grammar, style, composition; conversation and some translation. A course designed to perfect the command of Italian.

Prerequisite: Italian 26.200 or equivalent.

Day division: Three hours a week and one hour practice in the laboratory.

Italian 26.301

**Tutorial: Italian Language from 1860**

A tutorial on the problems of language from the Unification of Italy to the present.

Prerequisite: Italian 26.200. This tutorial can be taken concurrently with Italian 26.300, with permission of the Department.

Not offered 1986-87.

Italian 26.302

**Tutorial: Translation**

A tutorial that deals with selected problems of translation and that includes work in translation to and from Italian.

Prerequisite: Italian 26.300 or permission of the Department.

Not offered 1986-87.

Italian 26.340

**Development of Literary Genres**

A sequel to Italian 26.240. A historical approach to genres.

Prerequisite: Italian 26.240 or permission of the Department.

Day division: Three hours a week.

Italian 26.341

**Tutorial: Studies in Literary Genres**

A tutorial on the development of a particular genre studied in a historical perspective. Topic for 1986-87: *The Italian Novel*.

Prerequisites: Italian 26.240 and 26.340 or permission of the Department.

Italian 26.360★

**Special Topic in Italian Culture**

A half-credit on Italian culture, taught in English. This course can be used as an Arts option. The topic may change from year to year.

Not offered 1986-87.

Italian 26.361

**Tutorial: Popular Culture in Italy from the 1800s to the Present**

A tutorial on selected trends of popular culture in Italy.

Prerequisite: Italian 26.260 or permission of the Department.

Not offered 1986-87.

Italian 26.391★

**Tutorial: Special Topic**

A tutorial on a selected topic in the study of language or literature or Italian culture.

Prerequisite: Permission of the Department.

Italian 26.401

**Tutorial: Language and Dialects**

A language tutorial with particular reference to the complex problems of Italian and dialects in Italy and in North America.

Prerequisite: Permission of the Department.

Italian 26.441

**Tutorial: Literature**

A tutorial on a selected author or movement.

Prerequisite: Permission of the Department.

Not offered 1986-87.

Italian 26.461

**Tutorial: Contemporary Italian Culture**

A tutorial on particular themes or trends of Italian culture as they have developed from the Second World War to the present.

Prerequisite: Permission of the Department.

Not offered 1986-87.

Italian 26.491

**Special Studies**

A tutorial on a selected language or literature or civilization topic.

Prerequisite: Permission of the Department.



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## Officers of the School

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### Director

G. Stuart Adam

### Associate Director (Mass Communication)

J.R. Weston

### Supervisor of Graduate Studies

Peter Johansen

### Co-ordinator of One-Year Program

Sandra Came

### Supervisor of Undergraduate Studies, Journalism

Dan Pottier

### Professors Emeriti

Wilfrid Eggleston

Wilfred Kesterton

### Professors

G. Stuart Adam

Carman Cumming

Murray Goldblatt

T. Joseph Scanlon

Anthony Westell

### Associate Professors

Roger Bird

Sandra Came

Ross Eaman

George Frajkor

Patrick MacFadden

Brian Nolan

Dan Pottier

Robert Rupert

Eileen Saunders

Marvin Schiff

Brian Taylor

David Van Praagh

J.R. Weston

### Assistant Professors

Peter Bruck

Alan Frizzell

Peter Johansen

### Instructor

Barbara Freeman

### Visiting Associate Professor

Cameron Graham

### Sessional Lecturers

Elly Alboim

David Barbour

Berkeley Kaite

Linda Marchand

Don McGillivray

David Mowbray

Brian Murphy

Clyde Sanger

John Sawatsky

Ron Thibault

### Field Work Supervisors

Brian Crawford (CKOY)

Fran Cutler (Canadian Broadcasting Corporation)

Bruce D'Andrea (CFG0)

Murdoch Davis (*The Citizen, Ottawa*)

Cory Galbraith (CJSB)

Chris Jermyn (Canadian Press)

Max Keeping (CJOH)

Claude Lemieux (Information Services Branch, Canadian Government Office of Tourism)

Arch MacKenzie (Canadian Press)

Steven Madely (CFRA)

Dave McGinn (CJOH)

Roy McGregor (Maclean's Magazine)

Jim Peters (The Gazette, Montreal)

Norris Whitfield (Canadian Broadcasting Corporation)

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## General Information

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### Bachelor of Journalism Honours Programs

The School of Journalism offers the degree of Bachelor of Journalism with Honours through two programs of study. Students entering the University after Senior Matriculation complete a four-year course of 21 credits. Students who are already university graduates may qualify for a one-year program of five credits.

The aim of these programs is not to train technologists; it is to give students the ability to investigate, interpret and communicate intelligently in any of the mass media. To this end, courses are designed to give students both professional skills and an understanding of how media function, in order that they can adapt to the various areas of modern journalism. Advantage is taken of the many resources outside the University provided by the location of the University in the national capital.

Journalism courses, with the exception of a few seminars, are offered in the Day division only. Optional courses in the four-year program, however, may be offered in the Evening division.

### Bachelor of Arts in Mass Communication

The School of Journalism offers Major and Honours Arts undergraduate programs in Mass Communication. See p. 200.

### Graduate Programs

The School of Journalism offers the Master of Journalism degree. A Master of Arts program with a specialization in communications is offered through the Institute of Canadian Studies. For further details consult the Graduate Studies and Research Calendar.

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## Bachelor of Journalism Honours Four-Year Program

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### Program Requirements

Candidates for the degree of Bachelor of Journalism take a total of 21 credits, normally in this sequence:

#### First Year

Journalism 28.100 and 28.101★;

A language credit, preferably French\* (acceptable 100-level French courses are French 20.102, 20.108 and 20.110);

Three approved optional credits.

\*Students should be aware that the Department of French offers French 20.110 and two senior courses, French 20.210 and 20.310, specifically for Journalism students.

Students should be aware of the School's requirement that, before graduation, four credits must be taken in a field other than Journalism, with at least one of these credits at the 300 level or higher.

#### Second Year

Journalism 28.200 and 28.220;

An approved credit in Canadian history\*, normally History 24.230 or 24.231;

Two approved optional credits.

\*Students who expect to practise journalism in another country may be advised to choose a different history course and must seek written permission to do so from the Supervisor of Undergraduate Studies (Journalism).

#### Third Year

Journalism 28.351★ and 28.320 (Note: Journalism 28.320 is a two-credit course);

Three approved optional credits. These options must include at least one but may include additional Journalism credits. The courses available as options are: Journalism 28.215, 28.300, 28.305★, 28.306★, 28.321★, 28.333, 28.345, 28.352★, Mass Communication 27.201, 27.280, 27.290, 27.311, 27.355★ and 27.357★. Furthermore, a student registered in a straight Journalism program should continue working toward the School's requirement that, before graduation, four credits must be taken in a field other than Journalism, with at least one of these credits at the 300 level or higher.

#### Fourth Year

Journalism 28.421 and 28.498;

Three approved optional credits. Students will note the School's requirement described above regarding non-Journalism courses. The Journalism options offered in Fourth year are Journalism 28.400 and 28.490.

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### Combined Honours

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Honours programs may be taken by students in the four-year undergraduate program in which Journalism is combined with other disciplines by arrangement. The minimum requirements are normally the same as those for the Bachelor of Journalism with Honours, with the exception that students in Combined Honours programs may write their graduating research paper for either of the participating departments. The degree obtained (Bachelor of Journalism or Bachelor of Arts with Honours) depends upon the department for which a student writes the graduating research paper. Nevertheless, *Combined Honours programs in Journalism and other disciplines are available only to students registered in Journalism.*

Students in Combined programs are required to complete 21 credits, but are excused from the 300- and 400-level Journalism options required for the Honours program.

#### Combined Honours, Journalism and Economics

See p. 124 and consult the Department of Economics.

#### Combined Honours, Journalism and English

See p. 133 and consult the Department of English Language and Literature.

#### Combined Honours, Journalism and French

See p. 146 and consult the Department of French.

#### Combined Honours, Journalism and Mass Communication

See p. 200.

#### Combined Honours, Journalism and Political Science

See p. 219 and consult the Department of Political Science.

#### Combined Honours, Journalism and Law

Course requirements are:

1. Journalism 28.100, 28.101★, 28.200, 28.220, 28.320, 28.351★, 28.421 and, if the Honours degree sought is the Bachelor of Journalism, Journalism 28.498; *Note:* Journalism 28.320 is a two-credit course
2. At least six but not more than nine credits in Law according to the following prescribed pattern: Law 51.100 or the combination of 51.101★ and 51.102★; 51.200; at least one Law credit at the 300 level or higher; at least one other Law credit at the 400 level; if the degree sought is a Bachelor of Arts, an Honours essay in Law (51.498) or designated equivalent; but if the Honours essay is in Journalism, Law 51.490, Directed Studies in Law; at least one other Law credit, which may not include Law 51.201;
3. A language credit other than English (preferably French; acceptable 100-level French courses are French 20.102, 20.108 and 20.110);
4. An approved credit in Canadian history. (Students who plan to practise journalism in another country may be advised to choose a different History course and must seek permission to do so from the Supervisor of Undergraduate Studies, Journalism.);
5. Approved options to make up a program total of 21 credits.

#### Combined Honours, Journalism and Philosophy

Course requirements are:

1. Journalism 28.100, 28.101★, 28.200, 28.220, 28.320, 28.351★, 28.421 and, if the Honours degree sought is the Bachelor of Journalism, Journalism 28.498; *Note:* Journalism 28.320 is a two-credit course
2. Seven credits in Philosophy, including: an introductory course or equivalent; six credits beyond the 100 level to include:
  - (a) two credits in the history of philosophy;
  - (b) Philosophy 32.280 or 32.290;
  - (c) one credit at the 400 level.
3. A language credit other than English (preferably French; acceptable 100-level French courses are French 20.102, 20.108 and 20.110);
4. An approved credit in Canadian history. (Students who plan to practise journalism in another country may be advised to choose a different History course and must seek permission to do so from the Supervisor of Undergraduate Studies, Journalism.);
5. Approved options to make up a program total of 21 credits.

#### Combined Honours, Journalism and Sociology

Course requirements are:

1. Journalism 28.100, 28.101★, 28.200, 28.220, 28.320, 28.351★, 28.421 and, if the Honours degree sought is the Bachelor of Journalism, Journalism 28.498; *Note:* Journalism 28.320 is a two-credit course.



2. Sociology 53.100 or Anthropology 54.100 or Sociology-Anthropology 56.100; Sociology-Anthropology 56.200★; either Sociology 53.201★ or Anthropology 54.201★; Sociology 53.370; Sociology-Anthropology 56.305 or Sociology 53.306 (if the Honours Essay is written in Sociology, Sociology 53.306 is recommended); if the Honours Essay is written in Sociology, Sociology 53.495 or 53.498 and two additional credits in Sociology, excluding Sociology-Anthropology 56.211, one of which must be taken at the 400 or 500 level; but, if the Honours Essay is written in Journalism, three additional credits in Sociology, one of which must be taken at the 400 or 500 level;

3. A language credit other than English (preferably French; acceptable 100-level French courses are French 20.102, 20.108 and 20.110);

4. An approved credit in Canadian history. (Students who expect to practise journalism in another country may be advised to choose a different history course and must seek permission to do so from the Supervisor of Undergraduate Studies, Journalism.);

5. Approved options to make up a program total of 21 credits.

### **B.J. Honours with a Concentration in Psychology**

#### **Note:**

The following course pattern does not constitute a Combined Honours program in Journalism and Psychology.

Course requirements are:

1. Journalism 28.100, 28.101★, 28.200, 28.220, 28.320, 28.351★, 28.421, 28.498; *Note:* Journalism 28.320 is a two-credit course.

2. Psychology 49.100, 49.200, two of 49.210★, 49.220★, 49.230★, 49.250★, 49.260★, 49.270★; two credits in Psychology chosen in consultation with members of the Department from Psychology courses in the areas of behavioural neuroscience, community and social psychology, perception and cognition, developmental psychology, or personality and assessment; and one optional credit in Psychology.

3. A language credit other than English (preferably French; acceptable 100-level French courses are French 20.102, 20.108 and 20.110);

4. An approved credit in Canadian history. (Students who expect to practise journalism in another country may be advised to choose a different history course and must seek permission to do so from the Supervisor of Undergraduate Studies, Journalism.);

5. Approved options to make up a program total of 21 credits.

### **Admission, Continuation and Graduation in Four-Year Program**

#### **Admission and Continuation**

For admission to the First year, students are required to present either:

1. Completion of Qualifying-University year with a grade-point average of 4.0 or better; or

2. The Ontario Secondary School Honour Graduation Diploma with a *minimum* 65% average and including a language other than English (French is recommended).

It should be noted that the number of student spaces in the School is limited. Because of this it may not be possible to grant admission to all applicants who meet the foregoing requirements. Admission will therefore be on a selective basis with preference given to those candidates who show the highest promise of success in the course.

Admission to Second year will be guaranteed only to First-year Journalism students who achieve a minimum B- average in Journalism 28.100 and who maintain a 7.0 overall grade-point average in First year (calculated on five credits, including failures).

Students may normally be permitted to transfer into Second-year Journalism provided they have a minimum B- average in their First year and provided they make up First-year Journalism requirements: Journalism 28.100, 28.101★ and a language, preferably French. (Acceptable First-year French courses are French 20.102, 20.108 and 20.110.)

Students may not continue into 300-level or higher courses without satisfactory standing. Admission to these courses will be based on a minimum of:

(a) C standing in Journalism 28.220;

(b) an average of C+ in the three Journalism subjects taken for credit in the first two years: Journalism 28.100, 28.200 and 28.220;

(c) an overall grade-point average of 4.0;

(d) completion of Journalism 28.101★.

#### **Note:**

Journalism students must become reasonably proficient on the typewriter as soon as possible. All assignments in the professional Journalism courses are done by typewriter.

### **Graduation Requirements**

In order to graduate, students must fulfil all University regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all School regulations.

In addition to the graduation requirements of the Faculty of Arts, a candidate for the degree of Bachelor of Journalism with Honours must have a C+ average in the Journalism courses, with C grades or better in the reporting courses, a minimum C- in each other Journalism course, and be recommended for graduation by the School.

If, after the regular examinations in any year, a student is below the standard, grades must be raised in the appropriate subjects by writing grade-raising examinations.

### **One-Year Program**

The holder of a Bachelor's or Master's degree in Arts or any field may be permitted to enrol in the one-year program and, if his or her background has reached the required standard, may qualify for the degree of Bachelor of Journalism with Honours in one academic year of five credits. If the background is insufficient, one or more additional credits may be required for the degree.

Applicants for this program must contact the School of Journalism directly, before June 1, for application materials. The deadline for receipt of completed applications and supporting material is June 15.

The one-year program will normally consist of the following:

1. Journalism 28.321★ (Career Seminars)
2. Journalism 28.430★ (Media and Society)
3. Journalism 28.461★ (Perspectives on Modern Society)
4. Journalism 28.451★ (Journalism Law and Ethics)
5. Journalism 28.446 (Print Journalism Laboratory) and Journalism 28.447 (Broadcast Journalism Laboratory)
6. Journalism 28.499 (Honours Research)

Students enrolling in the one-year program as the Qualifying year of the Master's program in the Communications stream are required to take five credits including a seminar in communications research, described in the course list under Mass Communication 27.201, and omitting Journalism 28.321★, 28.451★ and 28.499. Students proceeding to their Master's degree in the specialized reporting stream are required to take five credits, omitting Mass Communication 27.201 and Journalism 28.499. Arrangements will be made for apprenticeship assignments to supplement such practical experience as graduate students may already possess. Please note the foregoing reference to proficiency in typewriting, and the paragraph relating to academic standing and grades. A student must obtain a minimum overall average of C+, a minimum C grade in the reporting courses and a minimum C- in each other Journalism course.

### Classes of Honours

The system by which classes of Honours are determined is outlined on p. 90.

Students admitted to the one-year program will be notified of the value that has been applied to their overall previous academic work and this value will be included in the calculation of the overall average as if it represented the first three years of university work at Carleton.

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### Courses Offered

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#### Journalism 28.100

##### Introduction to Journalism Studies

An introduction to the semantic, linguistic and philosophical contexts and materials of journalism, followed by an outline of the historical development of journalism in Europe, the United States and Canada. Discussion groups are workshops for research writings, and study of a series of readings.

Prerequisite: For Journalism Honours students only.

Day division: Lectures and discussion groups three hours a week.

#### Journalism 28.101★

##### Journalism Workshop

A course designed to provide Journalism students with fundamental skills in typing and note-taking. Students normally take Forkner shorthand during one term and typing during the other, unless they are already qualified in one or both skills. The qualification standard is 60 words per minute for shorthand or speed writing and 25 words per minute in typing. The course is marked on a satisfactory/unsatisfactory basis; students are passed as soon as they have demonstrated proficiency in both skills. Students are not permitted to withdraw from this course except with approval of the School, and must have passed the course before entering Journalism 28.320. There are no formal supplemental examinations in this course.

Prerequisite: For Journalism Honours students only.

Day and Evening divisions: Workshops four hours a week.

#### Journalism 28.200

##### Problems of the Mass Media

A historical and contemporary examination of mass media problems including ownership structure, monopoly, government control, freedom and secrecy, responsibility and ethics, public opinion, propaganda, copyright, censorship in war and peace.

Prerequisite: Journalism 28.100 or Mass Communication 27.111.

Day division: Three hours a week.

#### Journalism 28.215

##### The Documentary

This course examines the work of individual film makers, of documentary styles, and of organizations and institutions in the context of the history of documentary film making. Non-fiction films other than documentaries may be considered. (Also listed as Film Studies 19.215.)

Prerequisite: Film Studies 19.100 or permission of the School.

Day division: Lecture and screening three hours, lecture one hour.

#### Journalism 28.220

##### Fundamentals of Reporting

The collection and presentation of news, for print, radio and television media. This is mainly a practical course, based on workshop and newsroom assignments.

Prerequisites: For Second-year Honours Journalism students and transfer students.

Day division: Lectures and workshops six hours a week.

#### Journalism 28.300

##### The Modern Environment

A seminar course for Journalism students in which a number of texts drawn from the social sciences, literature, journalism and philosophy are considered for their contributions to an understanding of contemporary society and the issues that provide the background to much of contemporary journalism.

Prerequisites: Journalism 28.100 or Mass Communication 27.111 and Journalism 28.200 or permission of the School.

Not offered 1986-87.

#### Journalism 28.305★

##### International Media Systems

This course is concerned with the flow of world news—how it is collected, transmitted, received, selected, edited and distributed; how it informs or inhibits our views of the world around us. It examines the relationship and dependence of Canadian media on regional and international institutions and systems. It examines such items as media systems; the role of international news agencies; the role of global telecommunication systems; the foreign news-gathering operations of national radio and television networks, and the inter-network arrangements for news distribution; the role of supranational media institutions such as UNESCO, the International Press Institute, the Inter-American Press Association and the International Organization of Journalists; the role of regional distribution agencies such as Intervision, Eurovision, European Broadcasting Union, Asian Broadcasting Union. (Also listed as Mass Communication 27.305★.)

Prerequisite: One of Journalism 28.100, 28.200, Mass Communication 27.111, 27.211 or permission of the School.



**Journalism 28.306★****Comparative Media Studies**

This course is concerned with comparisons of media content, organization or operation. Comparisons may be cross-cultural in nature (i.e. comparisons of English and French-Canadian media content), cross-media (i.e. comparisons of broadcast and print media organizations), cross-national (i.e. comparisons of media operations in various countries) or a mixture of these. There may also be comparisons over time. Some time is spent examining and employing research tools and methods used in these studies. (Also listed as Mass Communication 27.306★.)

Prerequisite: One of Journalism 28.100, 28.200, Mass Communication 27.111, 27.211 or permission of the School.

**Journalism 28.320 (2 credits)****Advanced Reporting and Editing**

The course covers advanced work in TV, radio and print media. Under staff supervision, students report and edit for a community newspaper, report and produce for radio news and television news, and engage in depth reporting.

Prerequisite: Journalism 28.101★ and Journalism 28.220.  
Day division: Day-long workshops once a week plus approximately 30 hours of newsroom work a term.

**Journalism 28.321★****Career Seminars**

An opportunity for the student to specialize by doing work in such areas as television, radio, magazines, public relations, creative writing, editorial writing, free-lancing, the film, or reporting in the French language. Certain of these specialties may not be offered in a given year.

Prerequisite: For Third- and Fourth-year and one-year B.J. students only.

Day division: Annually, as required; two hours alternate weeks all year.

**Journalism 28.333****Film and Society**

An examination of film in relation to social and intellectual developments of the twentieth century. The ways in which the cinema has both shaped and been shaped by some of these developments are considered. (Also listed as Film Studies 19.333.)

Prerequisite: For Third- and Fourth-year students or permission of the School.

Day division: Lecture and screening three hours a week, lecture one hour a week.

**Journalism 28.345****The Journalist in the Twentieth Century**

An examination of how Western journalists have covered a number of major events in the twentieth century, together with a brief comparison of their coverage, with subsequent interpretations in order to gain a better understanding of the contributions and limitations of modern journalism.

Prerequisite: Permission of the School.

Not offered 1986-87.

**Journalism 28.351★****Communications Law I**

This course is concerned with the general laws governing the mass media in Canada with attention to their effect on freedom of expression. Specific topics for examination include: contempt of court; free press, fair trial; revealing of sources; civil defamation; criminal libel; obscenity and

censorship; copyright; privacy; government secrecy; the law of advertising. (Also listed as Law 51.351★ and Mass Communication 27.351★.)

Prerequisite: Permission of the School.

Day division, Fall term: Lectures and discussions three hours a week.

**Journalism 28.352★****Communications Law II**

The law as it affects the Canadian broadcasting and communications industry. The primary focus of the course is on the operations of the Canadian Radio-Television and Telecommunications Commission. Specific topics for examination may include: administrative formulation of policy; multiple, monopoly and foreign ownership; control of program content (violence, obscenity, "good taste," food and drug commercials, liquor advertising, indirect censorship); controlling program quality; the provision of a right of access to the media; cablevision licensing and control; alternative sanctions. (Also listed as Law 51.352★ and Mass Communication 27.352★.)

Prerequisite: Permission of the Department of Law.

Evening division, Winter term: Lectures and discussion three hours a week.

**Journalism 28.400****Basic Issues**

A seminar on leading news topics of the day. Stress is placed upon intensive investigation and consideration of perennial problems as well as emerging public issues likely to confront the professional journalist.

Prerequisite: Journalism 28.300.

Not offered 1986-87.

**Journalism 28.421****Specialized Reporting**

An opportunity for students to specialize by acquiring background and undertaking assignments in all media in various specialized areas, such as science and technology, business and finance, sports, the arts, international affairs, Canadian politics and government, social welfare. Certain of these specialties may not be offered in a given year.

Prerequisite: Journalism 28.320.

Day division: Three hours a week.

**Journalism 28.430★****Media and Society**

An examination of the conditions under which genuine communication is possible in a modern democratic society, with special attention to patterns of journalistic practice, media ownership and governmental regulation in Canada, Britain and the United States. Emphasis is placed on certain traditional texts as well as on current research studies related to journalism and communication.

Prerequisite: For students in the one-year program or permission of the School.

**Journalism 28.446****Print Journalism Laboratory**

A laboratory course in basic reporting and editing techniques, followed by application in the print media.

Prerequisite: For students in the one-year program.

**Journalism 28.447****Broadcast Journalism Laboratory**

A laboratory course in reporting and editing in the broadcast media.

Prerequisite: For students in the one-year program.

Journalism 28.451★

**Journalism Law and Ethics**

The purpose of this course is to prepare students to function comfortably, within the legal and ethical guidelines governing journalism. The course also aims to help them avoid the large errors in reporting legal matters. Topics studied and discussed include: the difference between civil and criminal law; contempt of court; free press, fair trial; revealing of sources; civil defamation; criminal libel; obscenity; copyright; privacy; government secrecy; advertising law.

Prerequisite: For students in the one-year program.

Journalism 28.461★

**Perspectives on Modern Society**

A seminar course examining texts from the social sciences, philosophy, literature and journalism for the contribution they make to an understanding of issues facing modern industrial society.

Prerequisite: For students in the one-year program.

Journalism 28.490

**Honours Tutorial**

Students are asked to analyze some of the major achievements in contemporary journalism. They work individually and in groups in presenting research papers. Students are also given the opportunity to acquire background and experience in the managerial aspects and production of print and broadcast journalism.

Prerequisite: Journalism 28.320.

Journalism 28.498

**Honours Research**

Students in this course have to carry out directed research and prepare a project under faculty supervision. The deadline for completion of the Honours research project is April 1.

Prerequisite: For B.J. Honours students only.\*  
Day division.

Journalism 28.499

**Honours Research**

Working in a small group under the close supervision of a faculty member, the student in this course develops skills in interpretative reporting through the preparation of in-depth newspaper articles or broadcast features and the subsequent expansion of a topic within these into a full-fledged article or broadcast documentary. Where possible, students desiring to work on a particular public affairs topic are assigned to a supervisor with journalistic experience in that area. For students wishing to graduate in the Spring, the deadline for submission of the final project is April 1.

Prerequisite: For students in the one-year program.

\*Students should refer to general Faculty of Arts regulations regarding submission of Honours Essays (p. 89).



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## Officers of Instruction

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*Chairman*  
D. Wayand

*Supervisor of Honours Studies*  
S.B. Boyd

*Supervisor of Majors Studies*  
C.N. Sargent

*Professors*  
P.J. Fitzgerald  
D. Fraser  
J. George Neuspiel

*Associate Professors*  
R.L. Campbell  
P.J. Davidson  
D.W. Elliott  
J.A. MacKenzie  
M.H. Ogilvie  
C.N. Sargent  
R.P. Saunders  
D. Wayand

*Assistant Professors*  
S.B. Boyd  
M.H. Davies  
N.B. Jensen  
M. Mac Neil  
C.N. Mitchell  
W.W. Pue

*Adjunct Professors*  
M. Cohen  
K.G. McShane  
D. Pharand

*Sessional Lecturers*  
J. Arnold  
G. Blaney  
F. Burchill  
W. Cooper  
C. Currie  
J. Dickie  
P. Doody  
H. Fraser  
D. Good  
G. Grenville-Wood  
P. Heslin  
C. Jaekl  
K. Jull  
E. Keyserlingk  
T. Kirk  
D. MacDougall  
W. MacKinnon  
J. Marshall  
P. McEnery  
R. Morrow  
S. Ritchie  
S. Schwisberg  
P. Showler  
M. Sullivan  
E. Thomas  
R. Tourangeau  
N. Weeks  
V. Westwick  
J. Wilson

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## General Information

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Courses and programs in this Department are intended to promote an awareness of the place of rules respecting human conduct in the political, social and economic environment. Many Law courses were originally established to meet the need of students in other programs for a knowledge of the legal aspects of their own disciplines. It is a continuing desire of the Department that students bring to bear on legal problems the insights of other disciplines and it is the Department's hope that students will benefit from a knowledge of the techniques of legal analysis and of legal principles. Successful completion of courses or programs in the Department *does not* qualify anyone to practise law or give counsel on legal matters.

Students intending to proceed to a law school should note that no credit is given towards a law degree for Law courses taken at Carleton. However, prospective law students may find Carleton law courses valuable introductions to professional studies. Members of the Department are available to advise prospective law students as to their choice of law school and the selection of courses at this University.

The Department of Law offers programs leading to both Major and Honours degrees in law. Students may also undertake the study of law in a Combined Major or Honours program in conjunction with another discipline.

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## Transition Provisions

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The Department of Law introduced a revised program in 1985-86. Students who first registered in a Major or Honours program in a session prior to 1985-86 may proceed under either the old or new requirements. Students who first registered in a Major or Honours program in 1985-86 or later must complete the new program requirements. Students in doubt about their status should consult the Registrar or the Major or Honours Advisers in Law.

Students under the old program requirements who have not completed required courses that are no longer offered (Law 51.101★, 51.102★ or 51.200) must arrange appropriate course equivalents by contacting the Department Chairman.

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## Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all departmental regulations and requirements as set out below.

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## Introduction

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In the following program descriptions: (a) the term "course" means full credit course; (b) the term "normally" indicates that the formal requirements can only be waived by express permission of the Department in exceptional circumstances and on special written application.

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## Major Program

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The Major program is governed by the following regulations:

1. All Major programs must be approved by the Department after consultation with the Supervisor of Majors or some other member of the Department specifically designated for that purpose.

2. A Major in Law requires at least six but normally not more than nine Law credits or their equivalent according to the following prescribed pattern:

(a) Law 51.100; and

(b) Two of Law 51.203, 51.204 or 51.205; and

(c) At least three additional Law credits not including Law 51.231★ or 51.232★.

3. Students must either:

(a) have taken Law 51.100 or its equivalent and normally obtained a grade of C- or better at the time of declaring a Law Major; or

(b) include Law 51.100 or its equivalent in their program immediately after declaring a Law Major and normally obtain a grade of C- or better in it.

4. In addition to the Law credits, Major students must normally take at least three approved credits in one other discipline.

5. Students in the Major program must satisfy the general University regulations for Major programs.

### Note:

The attention of Major students is drawn to the requirement that any change in their program must be expressly approved by the departmental Supervisor of Majors and that this approval must not be presumed. Failure to heed the departmental Supervisor's advice may result in the student's ineligibility for certain advanced and graduate courses and programs or ineligibility to graduate.

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## Combined Major Program

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The Combined Major program is governed by the following regulations:

1. All Combined Major programs must be approved by the Department after consultation with the Supervisor of Majors or some other member of the Department specifically designated for that purpose.

2. Combined Major students will complete at least five, but normally not more than seven Law credits or their equivalent according to the following prescribed pattern:

(a) Law 51.100; and

(b) Two of Law 51.203, 51.204 or 51.205; and

(c) At least two further Law credits not including Law 51.231★ or 51.232★.

3. Students whose other discipline in a Combined Major program is not in the Faculty of Social Sciences must take at least one introductory or survey credit in a Social Science as may be approved by the Department.

4. Combined Major students must normally obtain a grade of C- or better in Law 51.100, or in the combination of its prescribed equivalent.

5. Students in the Combined Major program must satisfy the general University regulations governing B.A. Major programs.

6. All transitional arrangements governing entry into a Combined Major program in previous issues of the calendar are revoked.

### Note:

The attention of Combined Major students is drawn to the requirement that any change in their program must be expressly approved by the departmental Supervisor of Majors and that this approval must not be presumed. Failure to heed the departmental Supervisor's advice may result in the student's ineligibility for certain advanced and graduate courses and programs or ineligibility to graduate.

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## Honours Program

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The Honours program is governed by the following regulations:

1. All Honours programs must be approved by the Department after consultation with the Supervisor of Honours or some other member of the Department specifically designated for that purpose.

2. An Honours student must complete a minimum of 25 credits from Junior Matriculation or a minimum of 20 credits from Senior Matriculation including at least nine and normally not more than 12 Law credits or their equivalent according to the following prescribed pattern:

(a) Law 51.100 with a minimum grade of C+; and

(b) Law 51.203, 51.204 and 51.205 with an average grade of C+ or better; and

(c) At least four further Law credits including at least two credits at the 400 level or higher and not including Law 51.231★ or 51.232★.

(d) An Honours essay in Law (51.498), which includes a mandatory weekly workshop during Fall term of first registration.

3. Honours students normally must have taken Law 51.100 or its equivalent before entering the Honours program and have obtained a grade of C+ or better.

4. Honours students:

(a) will normally have completed 14 credits towards their Honours B.A. in law, must have an average of at least a C+ in their required 200-level courses and received written acceptance by a faculty supervisor before they may register in Law 51.498.

(b) should consult as early as possible with the Honours Supervisor regarding the process for registration in Law 51.498.

(c) must obtain a grade of B- or better in their Honours Essay in Law 51.498.

5. In addition to the Law credits, Honours students must normally take at least three approved credits in one other discipline.

6. Students in Honours program must satisfy the general University regulations for B.A. Honours programs.

### Note:

Attention of Honours students is drawn to the requirement that any change in their program must be expressly approved by the departmental Supervisor of Honours and that this approval must not be presumed. Failure to heed the departmental Supervisor's advice may result in the student's ineligibility for certain advanced and graduate courses and programs or ineligibility to graduate.



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**Combined Honours Program**


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The Combined Honours program is governed by the following regulations:

1. All Combined Honours programs must be approved by the Department after consultation with the Supervisor of Honours or some other member of the Department specifically designated for that purpose.
2. Combined Honours students must complete a minimum of 25 credits from Junior Matriculation or a minimum of 20 credits from Senior Matriculation.
3. Combined Honours students will complete at least six but normally not more than nine Law credits, or their equivalent according to the following prescribed pattern:
  - (a) Law 51.100 with a minimum grade of C+;
  - (b) Two of Law 51.203, 51.204 or 51.205 with an average grade of C+;
  - (c) At least one Law credit at the 300 level or higher;
  - (d) At least one other Law credit at the 400 level; and
  - (e) An Honours essay in Law (51.498), or a designated equivalent, or an Honours essay in the other discipline; (when the Honours essay is in the other discipline students are required to take an additional Law credit at the 300 or 400 level.)

**Note:**

Honours Essay (Law 51.498) includes a mandatory weekly workshop during Fall term of first registration.

4. Students whose other discipline in a Combined Honours program is not in the Faculty of Social Sciences must take at least one introductory or survey credit in a Social Science as may be approved by the Department.

5. (a) Applicants for Combined Honours normally must have obtained a grade of C+ or better in Law 51.100 or its equivalent before entering the Combined Honours program.

- (b) Combined Honours students will normally have completed 14 credits towards their Honours B.A., must have obtained an average of at least C+ in their two 200-level law courses, and have received written acceptance by a faculty supervisor before they may register in Law 51.498.

- (c) Combined Honours students should consult as early as possible with the Honours Supervisor regarding the process for registration in Law 51.498.

6. Students in a Combined Honours program must have obtained a grade of B- or better in their Honours Essay in Law (51.498), or in the designated equivalent.

7. Students in a Combined Honours program must satisfy the general University regulations for B.A. Honours programs.

8. Where the Combined Honours program is with the School of Journalism, and the Honours Essay is done in Journalism, the degree awarded will be the Honours Bachelor of Journalism with Law. Students are directed to the regulations of the School of Journalism, which include a requirement of 21 credits in four years.

**Note:**

The attention of Combined Honours students is drawn to the requirement that any change in their program must be expressly approved by the departmental Supervisor of Honours and that this approval must not be presumed. Failure to heed the departmental Supervisor's advice may result in the student's ineligibility for certain advanced and graduate courses and programs or ineligibility to graduate.

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**Criminology and Criminal Justice Concentration**


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For details see p. 119.

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**Off-Campus Courses**


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Introductory Law courses may be offered off-campus by the Department of Law. The particular course(s) offered and location(s) will be announced well in advance of the period of registration.

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**Prerequisites**


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The attention of students is drawn to the fact that many Law courses have designated prerequisites. In some instances "permission of the Department" is an alternative to the specified prerequisite. It must not be presumed that such permission will be granted automatically; and it may be granted subject to certain conditions, including the fulfilment of preliminary reading requirements or the submission of some written work.

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**Cross-listed Courses**


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Students should note that the Department of Law will normally regard a cross-listed course as a credit in the department in which the student registers. Students are advised to consult with the relevant departments before deciding under which department they should register in cross-listed courses.

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**Courses Offered**


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**Note:**

A star (★) following a course number indicates a half-credit course.

**Law 51.100**

**Introduction to Legal Studies**

An introduction to law and the Canadian legal system. Topics include an examination of the nature and functions of law; concepts and sources of law, and the relationship between law and social change; historical and constitutional foundations of the Canadian legal system; the common law and civil law traditions; legal institutions and methods; statutory interpretation and precedent; role of judges, lawyers and lay persons; effectiveness and accessibility of the legal system; alternatives to the court process as a mechanism for dispute resolution.

Day and Evening divisions: Lectures three hours a week, mandatory group workshops one hour a week.

*P.J. Fitzgerald, D. Fraser, N. Jensen, T.C. Mitchell, W. Pue*

**Note:**

Law 51.100 and the combination of Law 51.101★ with 51.102★ (no longer offered) are equivalent and only one of them may be taken for credit.

**Law 51.203**

**Introduction to Private Law Relationships**

This course examines the origins and scope of modern private law relationships. Values espoused by such concepts as legal personality, property and obligations

rising from contracts, torts and the law of restitution will be studied. The interaction of various private law categories and the role of the state in ordering private relations will be emphasized.

Prerequisite: Law 51.100 or permission of the Department.  
Day or Evening division: Lectures and discussions three hours a week.

*P.J. Davidson, M. Mac Neil, M.H. Ogilvie, C.N. Sargent*

#### Law 51.204

##### **Law and Antisocial Behaviour**

Canadian criminal process; the nature and purpose of criminal law; the criminal act as distinguished from civil wrong; the origin and development of contemporary principles and procedures, the various categories of criminal conduct. The role of enforcement agencies and of the courts in the administration of criminal law. Methods of criminal correction. Introduction to the study of the relationship between criminal activity and deviant behaviour.

Prerequisite: Law 51.100 or its equivalent or permission of the Department.

Day and Evening divisions: Lectures and discussions three hours a week.

*N. Jensen, C. Mitchell*

##### **Note:**

Students who have obtained credit for Law 51.234 (no longer offered) cannot also obtain credit for Law 51.204.

#### Law 51.205

##### **Introduction to Public Law**

This course examines the law relating to the state and the state's relationship to other legal persons. Basic principles of constitutional law, administrative law and selected other areas of public law are dealt with. Themes include the special features and problems of public law, implications of the expanded new role of modern governments, and legal and alternative processes in public law. Prerequisite: An introductory course in Political Science or Law 51.100 (or its equivalent) or permission of the Department.

Day and Evening divisions: Lectures and discussion three hours a week.

*D.W. Elliott*

#### Law 51.231★

##### **Business Law I**

An introduction to the legal system and legal ordering as it affects those engaged in business and economic activities. The law of tort is examined, including principles governing liability for negligence and intentional interference with others. The law of contract is studied, including the creation and enforceability of voluntary agreements and remedies for breach.

Day or Evening division, Fall term: Lectures and discussions three hours a week.

##### **Note:**

Law 51.231★ may not be taken for credit towards a Major, Honours, Combined Major or Honours degree in law. Students who have obtained credit for Law 51.220 or 51.221★ (no longer offered) may not also obtain credit for Law 51.231★.

#### Law 51.232★

##### **Business Law II**

A survey of legal topics of importance to those involved in business relationships. These topics include forms of business organization, property law and specialized contractual relationships such as sale of goods, negotiable instruments, personal property security, insurance, bail-

ment and agency.

Prerequisite: Law 51.231★ or permission of the Department.

Day or Evening division, Winter term: Lectures and discussions three hours a week.

##### **Note:**

Law 51.232★ may not be taken for credit towards a Major, Honours, Combined Major or Honours degree in law. Students who have obtained credit for Law 51.220 or 51.222★ (no longer offered) may not also obtain credit for Law 51.232★.

#### Law 51.300★

##### **The Legal Process**

This course explores advanced topics in the legal process such as the nature and function of law, dispute resolution and law-making.

Prerequisites: Law 51.100 (or its equivalent) and any two of Law 51.203, 51.204 or 51.205, or permission of the Department.

Day and Evening divisions, Fall term: Seminars three hours a week.

##### **Note:**

Students who have obtained credit for Law 51.200 (no longer offered) cannot also obtain credit for Law 51.300★.

#### Law 51.301★

##### **Women and the Legal Process**

This course examines the manner in which the legal process has affected the status of women. Areas of concentration within the Canadian context include the criminal law, citizenship and immigration, education, employment, and welfare and social services.

Prerequisite: One of Law 51.100 (or its equivalent) or 51.200, or permission of the Department.

Day or Evening division, Fall term: Lectures and discussions three hours a week.

*M.H. Davies*

#### Law 51.303★

##### **Contracts**

This course explores in depth some aspects of the contractual relationship. Basic doctrines and precepts are studied and an assessment made of their rationale and efficiency. The role of contracts as a means of economic and social control is considered. Such issues as the interests protected by contract law, the most suitable remedies and the increasing influence of legislation on the ordering of contractual relations are also addressed.

Prerequisite: Law 51.203 or permission of the Department.  
Day or Evening division, Fall or Winter term: Lectures and discussions three hours a week.

#### Law 51.311★

##### **Philosophy of Law: The Nature of Law**

This course examines the concept of law, leading theories of law and related concepts such as rules and obligations, power and authority, coercion, and justice. (Also listed as Philosophy 32.311★.)

Prerequisite: One of Law 51.100 (or its equivalent) or Law 51.210 or permission of the Department.

Day division, Fall term: Lectures and discussions three hours a week.

*P.J. Fitzgerald*

##### **Note:**

Students who have obtained credit for Law 51.310 (Philosophy 32.350) (no longer offered) cannot also obtain credit for Law 51.311★ (Philosophy 32.311★).



**Law 51.312★****Philosophy of Law: The Logic of the Law**

This course examines the nature of legal reasoning and analyzes concepts particularly used in the course of legal reasoning such as rights and duties, ownership and possession, liability and punishment. (Also listed as Philosophy 32.312★.)

Prerequisite: One of Law 51.100 (or its equivalent) or Law 51.210 or permission of the Department.

Day division, Winter term: Lectures and discussions three hours a week.

**Note:**

Students who have obtained credit for Law 51.310 (Philosophy 32.350) (no longer offered) cannot also obtain credit for Law 51.312★ (Philosophy 32.312★).

**Law 51.315****Theory of Law and Politics**

A study of the interrelated theories of law and politics, as they are treated by prominent thinkers and by important schools of thought and as they have manifested themselves in various legal and political institutions throughout history. Topics of investigation include law and ethics, justice and equity, positivism and natural law, state absolutism and positive law, the political background of past codifications as well as anthropological and historical theories of law and society.

Prerequisite: Law 51.100 (or its equivalent) or Political Science 47.100 or permission of the Department.

Day or Evening division: Lectures and discussions three hours a week.

**Note:**

Students who have obtained credit for Law 51.210 (no longer offered) cannot also obtain credit for Law 51.315.

**Law 51.321****Company Law**

The law relating to corporations and partnerships in Canada; the historical development of the corporate device; rights and duties of officers, directors and shareholders of the corporation; legal aspects of corporate finance; comparative aspects of corporation law in the United Kingdom, the United States and Europe.

Prerequisite: Law 51.203 or 51.220 or permission of the Department.

Day or Evening division: Lectures and discussions three hours a week.

*R.L. Campbell*

**Law 51.323★****The Legal Nature of Property**

An examination of the nature and functions of property as a legal and social institution, with particular reference to theories of property, the scope of property interests, and the relationship between individual property rights and the state.

Prerequisite: Law 51.203 or permission of the Department.

Day or Evening division: Lecturers and discussions three hours a week.

**Note:**

Students who have obtained credit for Law 51.323 (no longer offered) may not also obtain credit for Law 51.323★.

**Law 51.324****Tax Law and Policy**

An introduction to federal income taxation, both personal and corporate, and a review of the Canadian tax system generally with some reference to the development, imple-

mentation and enforcement of tax policy.

Prerequisite: Law 51.203 or 51.220 or 51.232★ or permission of the Department.

Day and Evening divisions: Lectures and discussions three hours a week.

**Law 51.325★****Consumer Law**

This course examines the need for consumer protection in the provision of goods and services, and investigates the traditional legal protection afforded by statute and common law, the legislative response to consumer pressures and the judicial response in recent Canadian, English and American law. In addition, reform of consumer law is considered.

Prerequisite: Law 51.203 or 51.220 or 51.232★ or permission of the Department.

Day division, Fall term: Lectures and discussions three hours a week.

**Note:**

Students who have obtained credit for Law 51.325 (no longer offered) cannot also obtain credit for Law 51.325★.

**Law 51.326★****Banking Law and Negotiable Instruments**

This course examines the law relating to banks, banking and negotiable instruments. Particular emphasis is placed on the nature of the legal relationship created and on the legal rights and duties of the parties involved. Areas studied include the consumer and commercial aspects of banking (including computerization) and bills of exchange, cheques and promissory notes as well as credit cards.

Prerequisite: Law 51.203 or 51.220 or 51.232★ or permission of the Department.

Day division, Winter term: Lectures and discussions three hours a week.

**Law 51.327★****International Economic Law: Trade and Investment**

A general introduction to the legal aspects of foreign trade and investment. Topics may include: the international sale of goods and related issues of finance of transnational transactions, international carriage of goods, insurance, agency and trading houses; other forms of trade, e.g., counter-trade; foreign investment including transfer of technology and joint ventures; and dispute settlement of international disputes by litigation and arbitration.

Day or Evening division, Fall term.

Prerequisite: Law 51.203 or 51.232★ or permission of the Department.

**Note:**

Students who have obtained credit for Law 51.322 (no longer offered), may not also obtain credit for Law 51.327★.

**Law 51.328★****International Economic Law: International Regulation**

A study of international regulation of trade and investment through such mechanisms as bilateral, regional and multilateral treaties and agreements. Topics may include: The General Agreement on Tariffs and Trade; the European Economic Community; the United Nations Conference on Trade and Development; intergovernmental commodity agreements; the International Monetary Fund; the World Bank and others.

Day or Evening division, Winter term.

Prerequisite: Law 51.203 or 51.205 or permission of the Department.

**Note:**

Students who have obtained credit for Law 51.322 (no longer offered), may not also obtain credit for Law 51.328★.

**Law 51.333**

**Torts**

The protection of personal interests in physical and proprietary security from interference. The manner in which the legislatures and the courts develop and broaden the law to meet the needs of a changing society. Compensation and loss distribution. The principal matters studied include: intentional torts, negligence, strict liability and nuisance.

Prerequisite: Law 51.100 or 51.200 or 51.203 or permission of the Department.

Day and Evening divisions: Lectures and discussions three hours a week.

*W. Pue, D. Wayand*

**Law 51.341★**

**Employment Law**

This course investigates the legal regulation of the employment relationship. It comprises a study of the contractual basis and the significant statutory regulation of the relationship. Particular questions such as who is an employee, and what are the rights and duties of the employee and the employer in creating, carrying out and terminating the relationship are canvassed. Statutory regulation through employment standards legislation, human rights codes, workers' compensation acts, occupational health and safety acts and other related statutes are covered.

Prerequisite: Law 51.203 or permission of the Department.

Day or Evening division, Fall and Winter terms: Lectures and discussions three hours a week.

*R.L. Campbell, M. Mac Neil*

**Note:**

Students who have obtained credit for Law 51.320 (no longer offered) cannot also obtain credit for Law 51.341★.

**Law 51.342★**

**Landlord and Tenant Relations**

An examination of the nature and history, creation and termination of the landlord and tenant relationship in Ontario, focusing on the rights and duties of both landlord and tenant under common law and statute and the legal distinction between residential and commercial tenancies. Particular attention is given to the recent statutory regulation of residential tenancies in Ontario, and the implications of rent control and security of tenure for housing policy.

Prerequisite: Law 51.203 or 51.220 or permission of the Department.

Day or Evening division, Fall and Winter terms: Lectures and discussion three hours a week.

*C.N. Sargent*

**Note:**

Students who have obtained credit for Law 51.320 (no longer offered) cannot also obtain credit for Law 51.342★.

**Law 51.345★**

**Labour Law**

A study of the ordering role of law in industrial relations. The course considers the effect of law on the relationship among employer, employer association, employee, union and the public. The main process considered is collective bargaining, and subprocesses studied are the recognition of the bargaining agent, bargaining for the collective agreement and administration of the agreement. The

attempt to resolve industrial conflict by formalization of the disputes into adversary modes and other methods of conflict-resolution is considered. The ordering role is studied in both its social and legal context.

Prerequisite: Law 51.200 or 51.203 or 51.205 or permission of the Department. Permission may be given to students in Business or Directed Interdisciplinary Studies who have completed Law 51.231★.

Day or Evening division: Lectures and discussions three hours a week.

*R.L. Campbell, M. Mac Neil*

**Note:**

Students who have received credit for Law 51.441 (no longer offered) cannot also obtain credit for Law 51.345★.

**Law 51.348★**

**Legal Aspects of Sport**

This course deals with issues in the legal regulation of sporting activities in Canada. Subjects considered include the constitutional power to regulate sport, government involvement in sports administration, criminal prosecutions for sports violence, civil liability for sports injuries including actions against school boards, sex discrimination in sport, and legal, economic and commercial aspects of professional and intercollegiate leagues including players' employment contracts and disciplinary proceedings.

Prerequisite: Law 51.100 or 51.220 or permission of the Department.

Day or Evening division, Winter term: Lectures and discussions three hours a week.

**Law 51.351★**

**Communications Law I**

This course is concerned with the general laws governing the mass media in Canada, with attention to their effect on contempt of court, free press, fair trial, revealing of sources, civil defamation, criminal libel, obscenity and censorship, copyright, privacy, government secrecy, the law of advertising. (Also listed as Journalism 28.351★ and Mass Communication 27.351★.)

Prerequisite: Permission of the Department.

Day division, Fall term: Lectures and discussions three hours a week.

**Law 51.352★**

**Communications Law II**

The law as it affects the Canadian broadcasting and communications industry. The primary focus of the course is on the operations of the Canadian Radio-Television and Telecommunications Commission. Specific topics for examination may include: administrative formulation of policy; multiple, monopoly and foreign ownership; control of program content (violence, obscenity, "good taste," food and drug commercials, liquor advertising, indirect censorship); controlling program quality; the provision of a right of access to the media; cablevision licensing and control; alternative sanctions. (Also listed as Journalism 28.352★ and Mass Communication 27.352★.)

Prerequisite: Permission of the Department.

Evening division, Winter term: Lectures and discussions three hours a week.

**Law 51.353**

**Civil Liberties and Human Rights**

This course examines legal conflicts that raise issues affecting basic freedoms of individuals or groups in Canadian society. The recurrent theme is the appropriate balance to strike between the rights of the individual and



the rights of that collectivity of individuals called society. Specific topics examined include: the concept of liberty; law and conscience; civil disobedience; crimes without victims; civil liberties and constitutional guarantees; the Canadian Bill of Rights and the Charter of Rights; racial discrimination and human rights legislation; hate literature and its control; legal problems of minority groups; poverty and law.

Prerequisite: Law 51.200 or 51.204 or 51.205 or permission of the Department.

Day and Evening divisions: Seminars three hours a week.

*M.H. Davies, K.G. McShane*

#### Law 51.354★

##### **Law and Native Peoples of Canada**

A study of the legal situation of native peoples in Canada. Topics include the constitutional framework of the law, Indian status, aboriginal rights, the treaty system, the relations between special native rights and the principle of equality before the law, hunting rights, government policy and the reserve system. Comparative references to native policy in other countries are also considered. (Students interested in the anthropological aspects of this topic are also referred to Anthropology 54.476★.)

Prerequisite: One of Law 51.205, 51.353 or permission of the Department.

Day or Evening division, Fall term: Lectures and discussions three hours a week.

*D.W. Elliott*

#### Law 51.355★

##### **Law Reform and the Protection of Life**

A study of the relationship among law, medicine and ethics concerning questions about life and death. Topics considered include the definition of death; cessation of treatment and euthanasia; right to refuse treatment; "right to die" legislation; meaning of "person" in the medical/legal context; informed consent; human experimentation; behaviour modification; and quality of life.

Prerequisite: Law 51.100 or 51.200 or 51.205 or permission of the Department.

Evening division, Fall term: Seminars three hours a week.

#### Law 51.374

##### **Local Government Law**

The legal framework of local and regional governments; the distribution of functions between the levels of local government and problems of the relationship between local government bodies and provincial and federal authorities; planning law and land use, regionalism and local government reform. (Also listed as Geography 45.374.)

Prerequisite: Law 51.100 (or its equivalent) or permission of the Department.

Evening division: Lectures and discussions three hours a week.

#### Law 51.380

##### **Law of Environmental Quality**

The legal process relating to resource conservation and to the control and abatement of pollution of water, air and land. The common law and statutory remedies through private actions in the ordinary courts; the role of public authorities through coercive techniques such as criminal sanctions, licensing of resource use, licensing of pollution, and direct remedial actions; non-coercive techniques such as subsidies, tax incentives, public works, research and persuasion; land-use control techniques in protecting environmental quality; constitutional division of legislative competence concerning these matters;

administrative problems of achieving interjurisdictional co-operation in activities by public authorities.

Prerequisite: Law 51.100 or 51.200 or 51.205 or permission of the Department.

Evening division: Lectures and discussions three hours a week.

#### Law 51.384

##### **Law of the Family**

This course examines the legal framework surrounding the family and family relationships in Canadian society. Main topics include marriage and cohabitation, matrimonial support, custody and access, adoption, child protection, domestic violence and dissolution of marriage. Major themes are state intervention in family affairs through the law; how the law copes with and encourages changes in the structure of the family; the relationship between movements towards equality for women and children and family law; the suitability of the adversarial process to family disputes.

Prerequisite: 51.203 or permission of the Department.

Day or Evening divisions: Lectures and discussions three hours a week.

*S. Boyd*

##### **Note:**

Students who have obtained credit for Law 51.284 (no longer offered) cannot also obtain credit for Law 51.384.

#### Law 51.395★

##### **Practicum in Criminal Justice**

This course provides experience in an institutional setting and supplements the theoretical approach of the classroom. An emphasis is placed on understanding the role of the particular agency within the wider institutional framework and also within a consistent and coherent policy on criminal justice. This course is graded on a satisfactory/unsatisfactory basis.

Prerequisite: Open only to students formally admitted to, and registered in, the Criminology and Criminal Justice Concentration.

#### Law 51.401★

##### **Law, Family and State**

The objective of the course is to explore the relationship between family law and: ideology of the family, gender roles, and the reproduction of family structures. The social ramifications of family law are emphasized, with a view to determining the potential for family law reform as an agency of social change.

Prerequisite: Law 51.301★ or 51.384 or permission of the Department.

#### Law 51.403★

##### **Law, Economy and Society**

This course introduces students to the nature of the relationship between private law, and economic and social change. Theoretical perspectives of this relationship are illustrated with case studies of selected topics.

Prerequisite: Law 51.203 or permission of the Department.

#### Law 51.420★

##### **Advanced International Economic Law**

In-depth examination of selected topics in the field of international economic law. Topics to be studied may include the legal regulation of international economic activity, methods of dispute settlement in international economic and trade law, standardization of international trade laws, the development of an autonomous international trade law, and selected conventions and insti-

tutions governing international economic law.

Prerequisite: Permission of the Department.

Day or Evening division, Fall term: Seminar three hours a week.

#### Law 51.435★

##### **Advanced Problems in Criminal Law**

This course involves an advanced study of selected problems and issues in criminal law. Depending on the interests of the instructor, topics such as sexual offences, abortion, the defence of insanity, criminal procedure, and the Charter of Rights and Freedoms are covered. An attempt is made throughout the course to determine the policy behind the particular direction or action being pursued by the courts or Parliament, and especially to illuminate the reasons behind the use of criminal law as an instrument of social control.

Prerequisite: Law 51.204 or 51.234 or permission of the Department.

Day or Evening division, Fall term: Seminars three hours a week.

*C. Mitchell*

#### Law 51.437★

##### **Legal Medical Issues in Criminal Law**

An advanced study of selected issues involving medical-legal conflicts and relationships in the field of social control. Topics covered may include mental disorder and criminal liability, theories of personality, diversion of offenders to civil commitment in hospital, insanity automatism, fitness to stand trial, prediction of dangerousness, and the classification, control, prescription and prohibition of psychoactive drugs.

Prerequisite: Law 51.204 or permission of the Department.

#### Law 51.440★

##### **The Arbitration Process in Industrial Relations**

An examination of arbitration in industrial relations in the form of rights arbitration to resolve disputes in the administration of the collective agreement and in the form of interest arbitration to resolve disputes in the negotiation of the collective agreement. The benefits and drawbacks of the process, the values that it espouses and the results that it produces are considered.

Prerequisite: Law 51.345★ or permission of the Department.

Day or Evening division, Winter term: Seminars three hours a week.

*R.L. Campbell, M. Mac Neil*

##### **Note:**

Students who have obtained credit for Law 51.441 (no longer offered) may not also obtain credit for Law 51.440★.

#### Law 51.445★

##### **Labour Relations in the Public Service**

A study of the collective bargaining process in the public sector with particular emphasis on the federal, Ontario and Quebec public services. The problems of adapting accepted collective bargaining procedures and techniques to the public service environment; the right to strike in the public service and essential industries; grievance procedures; the general problem of labour-management relationships in the public sector and the consequences thereof for efficiency and loyalty.

Prerequisite: Law 51.341★ or 51.345★ or 51.441 or permission of the Department.

Evening division, Winter term: Seminars three hours a week.

#### Law 51.450

##### **Canadian Constitutional Law**

A detailed study of the basic principles of the Canadian constitution. Sovereignty, the Rule of Law, the nature and limits of executive, legislative, and judicial power in Canada as interpreted by the courts. The distribution of powers under the Canadian constitution. An investigation of contemporary legal problems of federalism.

Prerequisite: Law 51.100 or 51.200 or 51.205 or a Political Science course in Canadian government or permission of the Department.

Day or Evening division: Lectures and discussions three hours a week.

#### Law 51.456★

##### **Administrative Law I**

Administrative law and practice. Defining and implementing public policy, creating and structuring the administrative body, and interpreting the enabling statute. Comparisons between administrative bodies and courts of law. Procedure before administrative bodies. Comparisons between individual federal and provincial administrative bodies.

Prerequisite: One of Law 51.200, 51.205 or permission of the Department.

Day or Evening division, Fall term: Lectures and discussions three hours a week.

*D.W. Elliott*

##### **Note:**

Students who have obtained credit for Law 51.455 (no longer offered) may not also obtain credit for Law 51.456★.

#### Law 51.457★

##### **Administrative Law II**

Characteristics and problems of control of administrative action. Varieties of legal control, judicial review, discretion, privative provisions and damages, appellate control and statutory reform. (Also listed as Public Administration 50.537★).

Prerequisite: Law 51.456★, Public Administration 50.536★ or permission of the Department.

Day or Evening division, Winter term: Lectures and discussions three hours a week.

*D.W. Elliott*

##### **Note:**

Students who have obtained credit for Law 51.455 (no longer offered) may not also obtain credit for Law 51.457★.

#### Law 51.463

##### **Public International Law**

An examination of the role of law in contemporary international relations. Nature, history and sources of international law; international personality of states; the status of international organizations and individuals; creation and effect of international obligations; importance and functions of law in the settlement of international disputes.

Prerequisite: Law 51.100 or 51.200 or 51.205 or a Political Science or History course in international relations or permission of the Department.

Day or Evening division: Seminars three hours a week.

*S.B. Boyd*

#### Law 51.464★

##### **Legal Aspects of the International Protection of Human Rights**

This course is an introduction to the developing international law relating to the protection of human rights.



General concepts, rules and institutions are considered, together with specific issues of concern, for example, self-determination, aboriginal rights, the refugee problem, and torture. The inherent problems and overall potential of international law in this area are discussed.

Prerequisite: Law 51.353 or Law 51.463 or permission of the Department.

Evening division, Winter term: Lectures and discussions three hours a week.

M. Davies

#### Law 51.486★

##### **The Civilist Tradition**

A comparative study of selected topics of several major European legal systems which are based on Roman law. The development of Roman law up to and including Justinian's *corpus juris civilis*. The reception of Roman law by various European continental legal systems. Comparative analysis of selected articles of the French, Austrian and German codes.

Prerequisites: Law 51.100 (or its equivalent) and another Law course or a Classics course or permission of the Department.

Day or Evening division, Fall term: Lectures and discussions three hours a week.

D. Wayand

#### Law 51.487★

##### **Quebec Civil Law**

A comparative examination of the legal system of Quebec. The weight and importance of the various sources of law in Quebec and how the law is made. Study of the Quebec Civil Code and of the force of the code provisions. Division of the code and influence of Roman law. Techniques of interpretation of the code. Detailed study of selected Articles of the code. Interpretation and application of the code in federal appeal courts.

Prerequisites: Law 51.100 (or its equivalent) and another Law course or Law 51.486★ or permission of the Department.

Day or Evening division, Winter term: Lectures and discussions three hours a week.

#### Law 51.488★

##### **Socialist Legal Systems**

A comparative approach to selected legal problems of the Soviet Union and a number of other socialist states. Marxist concepts of state and law, the Leninist, Stalinist and contemporary interpretations of law and their practical applications.

Prerequisite: One of Law 51.100 (or its equivalent), 51.200, 51.205, 51.450, 51.486★, a course in East European government or in the history of Eastern Europe or permission of the Department.

#### Law 51.490

##### **Directed Studies**

A reading or research course for selected students who wish to investigate a particular topic of interest. Available to Third- and Fourth-year students only.

Prerequisite: Written acceptance by a faculty adviser or permission of the Department.

#### Law 51.491★

##### **Tutorial in Law**

Members of the Department are prepared to give reading courses in selected fields. Students are encouraged to enquire from individual instructors or the Supervisor of Honours in what fields such reading courses are available.

Prerequisite: Permission of the Department.

Fall term.

#### Law 51.492★

##### **Tutorial in Law**

Members of the Department are prepared to give reading courses in selected fields. Students are encouraged to enquire from individual instructors or the Supervisor of Honours in what fields such reading courses are available.

Prerequisite: Permission of the Department.

Winter term.

#### Law 51.493★

##### **Advanced Legal Topics**

The topics of this course, to be offered as demand warrants, vary from year to year, and will be announced well in advance of the period of registration.

Prerequisite: Permission of the Department.

Day or Evening division, Fall term: Hours to be arranged.

#### Law 51.494★

##### **Advanced Legal Topics**

The topics of this course, to be offered as demand warrants, vary from year to year, and will be announced well in advance of the period of registration.

Prerequisite: Permission of the Department.

Day or Evening division, Fall or Winter term: Hours to be arranged.

#### Law 51.498

##### **Honours Essay**

Students in the Honours program must write an Honours Essay or a designated equivalent. Students in the Combined Honours program are required to write an Honours Essay in Law or a designated equivalent.

Prerequisites: Law Honours students will normally have 14 credits towards their Honours B.A. in Law before they register in Law 51.498; they must have obtained a minimum of C+ in Law 51.200 (old program) or an average of at least C+ in their required 200-level courses (new program) and received written acceptance by a faculty supervisor.

Law 51.498 (first registration) includes a mandatory weekly workshop during Fall term of first registration.

#### **Graduate Courses Open to Undergraduate Students**

##### **Law**

51.510F1 Advanced Problems in Legal Philosophy  
51.553W1 Advanced Legal Problems of Federalism  
51.556W1 Advanced Administrative Law Problems  
51.567W1 Advanced International Legal Problems

#### **Courses Planned for Summer School and Evening Division 1987-88**

As of publication of this Calendar, the Department hopes to be able to offer the following courses during the Summer sessions and Evening divisions for the next two years. Changes may be made, however, and interested persons are urged to consult the Department and to refer to future issues of the Calendar as they are published.

##### **Evening Division 1986-87**

51.100, 51.203, 51.204, 51.205, 51.231★, 51.232★, 51.300★, 51.301★, 51.303★, 51.321, 51.322, 51.323, 51.324, 51.333, 51.341★, 51.342★, 51.345★, 51.352★, 51.353, 51.355★, 51.374, 51.380, 51.384, 51.440★, 51.445★, 51.450, 51.464★, 51.494★.

*Summer 1987*

51.100, 51.203, 51.204, 51.205, 51.353, 51.384, 51.463.

*Evening Division 1987-88*

51.100, 51.203, 51.204, 51.205, 51.231★, 51.232★,  
51.300★, 51.301★, 51.303★, 51.321, 51.322, 51.323,  
51.324, 51.333, 51.341★, 51.342★, 51.345★, 51.352★,  
51.353, 51.355★, 51.374, 51.380, 51.384, 51.440★,  
51.445★, 51.450, 51.464★, 51.494★.

*Summer 1988*

51.100, 51.203, 51.204, 51.205; others to be announced.



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## Management Committee

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*Program Co-ordinator*  
K. Hatt

*Program Supervisor*  
C. Farmer

*Office*  
S. Rochon (B746LA)

### *Members*

D.P. Forcese (*Dean, Faculty of Social Sciences*)  
P. Fitzgerald (*Law*)  
J.G. Bellamy (*History*)  
T. Wilkinson (*Director, Continuing Education*)  
One student

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## General Information

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This certificate program is designed for persons employed in the areas of law enforcement, national security or corrections, who wish to attend university courses. The program is offered in Day and Evening divisions. Candidates for the certificate are also encouraged to investigate undergraduate degree programs offered by the University. Courses taken for the certificate are normally creditable towards a Bachelor of Arts degree. Such a degree program will normally require at least nine further credits in addition to those required for the certificate. Persons who wish to complete a Bachelor of Arts degree after taking the certificate must complete at least five of the credits required for a Bachelor of Arts degree after the awarding of the certificate.

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## Admission Requirements

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The Ontario Secondary School Honour Graduation Diploma (or the equivalent) with a minimum overall average of 60 percent, or Mature Matriculation (see Mature and Special Admissions p. 33).

Candidates may be admitted with advanced standing, but must complete at least four credits for the certificate at Carleton University.

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## Course Requirements

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The following courses are required:

1. Law 51.204 (Law and Antisocial Behaviour);
2. Sociology 53.255★ and 53.256★ (Sociology of Deviance, and Police in Society);
3. Political Science 47.200 (Canadian Government and Politics);

The candidate must, in addition, complete three credits, chosen in consultation with the Program Co-ordinator.

A candidate for the certificate must obtain a grade of C or better in at least one-half of the credits taken at Carleton University for the certificate.

Students are permitted nine attempts to complete the six-credit program.

# Department of Linguistics

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## Officers of Instruction

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### *Chairman*

Jaromira Rakušan

### *Professors*

William Cowan

Hans-George Ruprecht

Janice Yalden

### *Associate Professors*

Aviva Freedman

C. Stanley Jones

Jean-Pierre Paillet

Ian Pringle

Jaromira Rakušan

### *Assistant Professor*

Ellen Cray

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## General Information

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The Department of Linguistics offers programs leading to Major and Honours degrees in Linguistics. The aim of these programs is to provide the student with the theoretical and methodological bases and procedures for the analysis of language and languages, on both the descriptive and historical levels. In addition to the introductory course (Linguistics 29.100), there is a core of half-course credits dealing with special areas within linguistics, such as historical linguistics, semantics, psycholinguistics, sociolinguistics, language typology, language pedagogy and speech science. Advanced courses deal with phonetics, phonology, grammar, linguistic theory and applied linguistics.

The Department of Linguistics also offers a five-credit program leading to a Certificate in the Teaching of English as a Second Language for those students who already have a degree, in either Linguistics or another subject, or who have extensive experience in teaching. The courses include the theory of teaching English as a second language, an intensive, advanced course in the structure of English, and a range of complementary half-credit courses.

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## English as a Second Language

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For courses in English as a Second Language, see p. 140.

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## Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all departmental regulations and requirements as set out below.

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## Major Programs

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Students majoring in Linguistics must complete the following courses:

Linguistics 29.100, 29.301★, 29.302★, 29.303★, 29.304★, 29.381★, plus three other credits in Linguistics. In addition, all students must have a working knowledge of a modern language other than English, proficiency to be determined by successful completion of a university course in the language or by an oral or written test given by the department.

For Major programs combining Linguistics with another subject students must complete:

Linguistics 29.100, 29.301★, 29.302★, 29.303★, 29.304★, plus one further credit in Linguistics.

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## Honours Programs

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For the Honours degree in Linguistics, students must complete:

Linguistics 29.100, 29.301★, 29.302★, 29.303★, 29.304★, 29.381★, plus six other credits in Linguistics (including at least two and a half credits at the 400 level). In addition, all students must have a working knowledge of a modern language other than English, proficiency to be determined by successful completion of a university course in the language or by an oral or written test given by the Department.

For a Combined Honours degree in Linguistics, students must complete the following courses:

Linguistics 29.100, 29.301★, 29.302★, 29.303★, 29.304★, 29.381★, plus two and a half further credits in Linguistics (including at least one and a half at the 400 level). In addition, all students must have a working knowledge of a modern language other than English, proficiency to be determined by successful completion of a university course in the language or by an oral or written test given by the Department.

For Combined Honours in Linguistics and Russian (Translation Option), the following courses are required:

Linguistics 29.100, 29.301★, 29.303★, 29.304★, 29.485, 29.490. (In this program, the Tutorial in Linguistics consists obligatorily of directed readings in the theory of translation.) See also p. 243.

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## Certificate in the Teaching of English as a Second Language (CTESL)

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To receive the Certificate in the Teaching of English as a Second Language, students must meet the following requirements:

Linguistics 29.100, 29.421★, 29.423★, 29.424★, 29.425, 29.462★, 29.485. (Part-time students who had already been admitted and had completed some courses towards the Certificate before 1983-84 may, after discussion with the departmental adviser, elect to complete the Certificate either in accordance with the foregoing requirements or in accordance with the earlier requirements, viz. Linguistics 29.100, 29.420, 29.421★, 29.422★, 29.423★, 29.462★ and 29.485.) A candidate for the Certificate must obtain a grade of C or better in all courses taken at Carleton University under the Certificate program. In addition, students in the CTESL program must be fluent in English, proficiency to be determined by an oral or written test given by the Department.

It should be noted that students cannot receive both a B.A. degree and a Certificate at the same time, nor can



courses included in a B.A. or other degree be credited towards the certificate. If any of the foregoing Linguistics courses are included in the B.A., then the student must choose other courses in Linguistics in consultation with the Department.

### Admission Requirements

Applicants are admitted on the recommendation of the Department of Linguistics. Applicants have normally completed a first degree in another discipline, or a course of study in a teacher training college. Others with a strong academic background or with experience in the teaching of English as a second language may be admitted with permission of the Department.

It should be noted that the number of student spaces in the program is limited. Thus, it may not be possible to grant admission to all applicants who meet the foregoing requirements. Admissions will, therefore, be on a selective basis with preference given to those candidates who show the highest promise of success in the program.

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### Courses Offered

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#### Linguistics 29.100

##### Introduction to Linguistics

Elementary principles and methods of descriptive analysis of language; phonetics; phonology; morphology; syntax. Survey of other areas of linguistics: historical linguistics, sociolinguistics, psycholinguistics, semantics, applied linguistics.

Day and Evening divisions: Three hours a week.

Day division, Fall term: Six hours a week. (Recommended for CTESL students.)

#### Linguistics 29.211★

##### Historical Linguistics

Principles and methods of the historical analysis of languages; the comparative method; internal reconstruction; sound change; rule change; the philological method; problems in historical analysis.

Prerequisite: Linguistics 29.100.

Not offered 1986-87.

#### Linguistics 29.223★

##### Linguistic Theory and Second-Language Learning

A critical study of linguistic theory and description applied to second-language learning. Includes a brief consideration of similarities and differences in first- and second-language development, bilingualism and types of linguistic error and their significance.

Prerequisite: Linguistics 29.100.

Not offered 1986-87.

#### Linguistics 29.232★

##### Semantics

The study of meaning as a part of the study of communication. Organization of the semantic structure of language, and the relation of this structure to the lexicon.

Prerequisite: Linguistics 29.100.

Day division, Winter term: Three hours a week.

#### Linguistics 29.261★

##### Psycholinguistics

Language performance and language use; the production and perception of language; psychological processes involved in speech performance; the relevance of these questions to linguistic theory.

Prerequisite: Linguistics 29.100.

Not offered 1986-87.

#### Linguistics 29.264★

##### Speech and Language Problems

An examination of the congenital, developmental and acquired disorders of language, speech and voice; prevalences, types, causes and effects; related research.

Prerequisite: Linguistics 29.261★.

Day division, Winter term: Three hours a week.

#### Linguistics 29.271★

##### Sociolinguistics

The place of language within society; bilingual and multilingual communities; language, social mobility and social stratification; sociolinguistic factors in language change.

Prerequisite: Linguistics 29.100.

Day division, Fall term: Two hours a week.

#### Linguistics 29.272★

##### Language Typology

The study of language typology as a classificatory device, universalist hypothesis, and areal features. Methodology in language typology. The theoretical material is based on a survey of the world's languages and language types.

Prerequisite: Linguistics 29.100.

Not offered 1986-87.

#### Linguistics 29.280

##### Language and Communication

Among theories about the nature of language that the course examines are those of Skinner and the behaviourists; of Chomsky and other transformational-generative grammarians; and of the speech-act theorists. Among questions to which an answer is attempted are: What is language? What is meaning? What is it to communicate? Philosophical issues with respect to such topics as the following are considered: language and innate knowledge; language and culture; translation; the origins and acquisition of language; nonverbal communication; nonhuman language; machine languages; ideal languages, normative grammar and "correct" speech. (Also listed as Philosophy 32.280 and Mass Communication 27.280.)

Prerequisite: Second-year standing.

Day division: Lectures and discussion three hours a week.

#### Linguistics 29.297

##### Writing: Theory and Practice

A study of the process of writing in theory and practice. Reading and discussions focus on the nature of the composing process; the development of writing abilities from the elementary years to maturity; the interrelationships between thinking and writing; strategies for encouraging growth in writing. (Also listed as English 18.297.)

Prerequisite: Second-year standing or enrolment in the Certificate Program in English Language and Composition.

Schedule to be announced.

#### Linguistics 29.301★

##### Phonetics

Recognition, description, transcription and production of speech sounds; systems of transcription; the nature of the speech-producing mechanism; the acoustics of speech sounds. (Also listed as Anthropology 54.301★.)

Prerequisite: Linguistics 29.100.

Evening division, Fall term: Three hours a week.

Linguistics 29.302★

**Phonology**

The sound-systems of languages; methods for the analysis and description of phonological structure. The course concentrates on generative theory with comparisons to other theories. (Also listed as Anthropology 54.302★.)

Prerequisite: Linguistics 29.301★.

Evening division, Winter term: Three hours a week.

Linguistics 29.303★

**Language Analysis**

Direction and practice in the analysis of grammatical material, including both morphology and syntax. Models for the description of grammatical regularities. Course work consists principally of practical exercises. (Also listed as Anthropology 54.303★.)

Prerequisite: Linguistics 29.100.

Day division, Fall term: Three hours a week.

Linguistics 29.304★

**Grammatical Theory**

Comparison of major current schools of linguistics. Theories of grammatical structure. The testing of grammatical hypotheses. Grammatical structure and meaning. Course work consists principally of lectures and readings. (Also listed as Anthropology 54.304★.)

Prerequisite: Linguistics 29.303★.

Day division, Winter term: Three hours a week.

Linguistics 29.381★

**Language Structure**

Intensive analysis of the linguistic structure of a selected language, the structure of which is not currently being offered elsewhere in the University. This course may be taken for credit twice, provided a different language is being studied. Language for 1986-87 to be announced.

Prerequisite: Linguistics 29.100.

Day division, Winter term: Three hours a week.

Linguistics 29.390

**Independent Study**

Research under the supervision of a member of the department. Projects may be organized on an individual basis, or as a special seminar directed by an instructor. No more than one group project is offered in any one year. Normally open only to Third- and Fourth-year students.

Prerequisite: Permission of the Department.

Linguistics 29.391★

**Independent Study**

Research under the supervision of a member of the department. Projects may be organized on an individual basis, or as a special seminar directed by an instructor. No more than one group project is offered in any term. Normally available only to Third- and Fourth-year students in Linguistics.

Prerequisite: Permission of the Department.

Fall term.

Linguistics 29.392★

**Independent Study**

Research under the supervision of a member of the department. Projects may be organized on an individual basis, or as a special seminar directed by an instructor. No more than one group project is offered in any term. Normally available only to Third- and Fourth-year students in Linguistics.

Prerequisite: Permission of the Department.

Winter term.

Linguistics 29.401★

**Advanced Phonology**

A continuation of Linguistics 29.302★. Among topics covered: the methodological problems of phonology, the problems of markedness and natural rules, ordering, abstractness, and other current theoretical developments.

Prerequisite: Linguistics 29.301★, 29.302★, 29.303★, 29.304★ or permission of the Department.

Day division, Fall term: Three hours a week.

Linguistics 29.402★

**Advanced Grammar**

A continuation of Linguistics 29.304★. Among topics covered: global rules, clause movement, constraints, trace theory and other current developments in syntactic analysis.

Prerequisite: Linguistics 29.301★, 29.302★, 29.303★, 29.304★ or permission of the Department.

Day division, Fall term: Three hours a week.

Linguistics 29.409★

**Seminar in Current Issues in Linguistics**

The investigation of a theoretical issue that is currently the subject of controversy in linguistics, the topic being selected each year by the students and faculty. Topic for 1986-87: Aspects of Speech Act Theory.

Prerequisite: Linguistics 29.301★, 29.302★, 29.303★, 29.304★ or permission of the Department.

Day division, Winter term: Two hours a week.

Linguistics 29.421★

**Language Testing**

The principles of test construction as applied to testing language proficiency, achievement and aptitude. Structural, notional, discrete point and integrative tests are covered. Students are expected to create, analyse and evaluate language tests.

Prerequisite: Linguistics 29.223★ or enrolment in the CTESL program.

Evening division, Winter term: Three hours a week.

Linguistics 29.423★

**Analysis of Discourse**

Principles of discourse analysis and their application in problems in applied linguistics, such as the effect of classroom discourse on second-language learning, and methods for expanding the variety of discourse in a classroom setting. Students are required to observe both actual classroom interaction and videotapes of classroom discourse, and to undertake detailed analysis of such discourse.

Prerequisite: Third- or Fourth-year standing in Linguistics or enrolment in the CTESL program.

Day division, Winter term: Three hours a week.

Linguistics 29.424★

**Teaching English as a Second Language: History and Theory**

A comprehensive study of approaches to TESL since the 1940s. The contributions of linguistic theory, descriptions of English, second-language learning theory and theories of education are examined against the changing social background.

Prerequisites or corequisites: Linguistics 29.100 and Third- or Fourth-year standing, or full-time enrolment in the CTESL program.

Day division, Fall term: Three hours a week.



Linguistics 29.425

**Teaching English as a Second Language: Methodology**

Classification of classroom teaching materials and adaptation of teaching materials for particular situations; creation of teaching materials; teaching techniques and strategies.

Prerequisite or corequisite: Linguistics 29.223★ or enrolment in the CTESL program.

Day division: Three hours a week.

Linguistics 29.461★

**Seminar in Experimental Linguistics**

Experimental phonetics; the investigation of linguistic performance; the testing of propositions derived from the theory of linguistic competence.

Prerequisite: Linguistics 29.301★, 29.302★, 29.303★, 29.304★ or permission of the Department.

Evening division, Fall term: Three hours a week.

Linguistics 29.462★

**Second-Language Acquisition**

Current models of second-language acquisition and learning with an emphasis on empirical studies. Universals of second-language acquisition.

Prerequisite: Linguistics 29.261★ or enrolment in the CTESL program.

Evening division, Winter term: Three hours a week.

Linguistics 29.485

**Structures of English**

An intensive introduction to the structures of the English language, with particular emphasis on syntax; questions of usage and style; an introduction to regional, social and stylistic variation in English and to Canadian English.

Prerequisite: Linguistics 29.100 and Third- or Fourth-year standing, or full-time enrolment in the CTESL program.

Evening division: Three hours a week.

Linguistics 29.490

**Tutorial in Linguistics**

A course designed to permit students to pursue their interests in a selected area of linguistics. Students prepare papers as a basis for discussion with the tutor. The topic of study must have the prior approval of the tutor and the Department. The course is available only to Fourth-year Honours students, and may be taken only once.

Prerequisite: Permission of the Department.

Linguistics 29.491★

**Tutorial in Linguistics**

A course designed to permit students to pursue their interests in a selected area of linguistics. Students prepare papers as a basis for discussion with the tutor. The topic of study must have the prior approval of the tutor and the Department. The course is available only to Fourth-year Honours students, and may be taken only once.

Prerequisite: Permission of the Department.

Fall term.

Linguistics 29.492★

**Tutorial in Linguistics**

A course designed to permit students to pursue their interests in a selected area of linguistics. The student prepares papers as a basis for discussion with the tutor. The topic of study must have the prior approval of the tutor and the Department. The course is available only to Fourth-year Honours students, and may be taken only once.

Prerequisite: Permission of the Department.  
Winter term.

Linguistics 29.495

**Research Seminar in English and Education**

Investigation of recent developments in language study, rhetoric and composition, and studies of the literary imagination. Their implications for the teaching of English. (Also listed as English 18.495.)

Prerequisite: Linguistics 29.485 or English 18.295 and Linguistics 29.297 or permission of the Department.

Evening division: Two hours a week.

# Mass Communication

Associate Director, School of Journalism  
J.R. Weston

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## Bachelor of Arts in Mass Communication

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The School of Journalism (see p. 179) offers Major and Honours undergraduate programs in Mass Communication. Candidates for the Major program are required to take a minimum of 15 credits after Senior Matriculation and those in the Honours program 20 credits after Senior Matriculation. The Mass Communication programs are provided for students with broad interests in mass communication in contemporary society who do not intend to pursue careers as professional journalists. The Honours degree is designed for students who intend to do graduate work in communication or a related field.

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## Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all departmental regulations and requirements as set out below.

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## Admission and Continuation Requirements

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Admission and continuation requirements in the two programs are those set by the Faculty of Arts. However, admission to the Second year of a Mass Communication program will be guaranteed only to First-year students with a minimum B- in Mass Communication 27.111 and a 7.0 overall grade-point average (calculated on five credits, including failures).

### Major Program

The requirements for a Major in Mass Communication include six credits in Mass Communication:

1. Mass Communication 27.111, 27.201, 27.211, 27.311;
2. Two credits chosen from Mass Communication 27.280, 27.290, 27.305★, 27.306★, 27.343★, 27.351★, 27.352★, 27.355★, 27.357★;
3. Either Sociology-Anthropology 56.220 or Political Science 47.200;
4. Eight electives.

*Note:*

The prerequisites for Sociology-Anthropology 56.220 and Political Science 47.200 are normally waived for students in a Mass Communication program.

### Combined Major Program

The requirements for a Combined Major including Mass Communication are requirement 1 and one credit from requirement 2 of the Major Program.

### Honours Program

A candidate for a B.A. with Honours in Mass Communication requires nine credits in Mass Communication and one specified credit from another discipline. The requirements are:

1. Mass Communication 27.111, 27.201, 27.211, 27.311;

2. Two credits chosen from Mass Communication 27.280, 27.290, 27.305★, 27.306★, 27.343★, 27.351★, 27.352★, 27.355★, 27.357★;

3. Three credits chosen from Mass Communication 27.401, 27.411, 27.431, 27.497;

4. Either Sociology-Anthropology 56.220 or Political Science 47.200;

5. Ten elective credits.

*Recommended sequence for B.A. Honours in Mass Communication*

*First Year*

Mass Communication 27.111;

Four electives.

*Second Year*

Mass Communication 27.201, 27.211;

Sociology-Anthropology 56.220 or Political Science 47.200;

Two electives.

*Third Year*

Mass Communication 27.311;

Two credits chosen from Mass Communication 27.280, 27.290, 27.305★, 27.306★, 27.343★, 27.351★, 27.352★, 27.355★, 27.357★;

Two electives.

*Fourth Year*

Three credits chosen from Mass Communication 27.401, 27.411, 27.431, 27.497;

Two electives.

### Combined Honours

Students taking Combined Honours in Mass Communication and another discipline are required to take the following credits:

1. Mass Communication 27.111, 27.201, 27.211, 27.311;
2. One other 200- or 300-level Mass Communication credit;
3. Two of Mass Communication 27.401, 27.411, 27.431, 27.497.

### Combined Honours in Journalism and Mass Communication

Course requirements are:

1. Journalism 28.100, 28.101★, 28.220, 28.320, 28.351★, 28.352★, 28.421 and, if the Honours degree sought is the Bachelor of Journalism, Journalism 28.498;

*Note:* Journalism 28.320 is a two-credit course.

2. Mass Communication 27.201, 27.211, 27.311, and two credits chosen from Mass Communication 27.401, 27.411, 27.431, 27.497;

3. A language credit other than English (preferably French; acceptable First-year French courses are French 20.102 and 20.108);

4. An approved credit in Canadian history. (Students who expect to practise journalism in another country may be advised to choose a different history course and must seek permission to do so from the Supervisor of Undergraduate Studies, Journalism.);

5. Approved options to make up a program total of 21 credits.



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**Courses Offered**


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**Mass Communication 27.111****Introduction to Mass Communication**

The course provides a foundation for understanding human and mass communications. It is a broad survey course including general semantics, communication theory, mass media issues, telecommunications, and the role of the media in political and social change. Discussion groups or workshops are connected with either projects or research assignments related to the course. Lectures and discussion groups three hours a week.

**Mass Communication 27.201****Media Research**

An introduction to empirical research methods of media enquiry. The objects of the course are the development of an understanding of statistical analysis and research design and proficiency in computer analysis of research data.

Prerequisites: Mass Communication 27.111 or Journalism 28.100 and Major or Honours standing in Mass Communication or permission of the Mass Communication program.

Lecture two hours a week, laboratory one hour a week.

**Mass Communication 27.211****The Mass Media in Modern Society**

An examination of the historical development and current operations of the major mass media, with a view to relating developments to the larger social structure. Emphasis is on the relationship between the media and the structure of Canadian society. (Also listed as Sociology-Anthropology 56.211.)

Prerequisites: Mass Communication 27.111 and Major or Honours standing in Mass Communication or permission of the Mass Communication program.

Lectures and discussion three hours a week.

**Mass Communication 27.280****Language and Communication**

Among theories about the nature of language that the course examines are those of Skinner and the behaviourists; of Chomsky and other transformational-generative grammarians; and of the speech-act theorists. Among questions to which an answer is attempted are: What is language? What is meaning? What is it to communicate? Philosophical issues with respect to such topics as the following are considered: language and innate knowledge; language and culture; translation; the origins and acquisition of language; nonverbal communication; nonhuman language; machine languages; ideal languages; normative grammar and "correct" speech. (Also listed as Philosophy 32.280 and Linguistics 29.280.)

Prerequisite: Second-year standing.

Lectures and discussion three hours a week.

**Mass Communication 27.290****Truth and Propaganda**

A study of techniques, some ancient as well as modern, for influencing public opinion. The ethics of various attempts to control, affect or modify mass consciousness, under circumstances of wartime or peace, by the state, political parties, commercial interests or pressure groups, are discussed. Attention is paid to definition of key terms such as "propaganda," "manipulation," and the like, in the light of shifting nuances of different times and usages. The problem of arriving at a satisfactory definition of "truth" to compare or contrast with "propaganda" is one focal point of investigation. The values of an open

society, as against those promoted by closed societies, also receive attention, account being taken of subtler as well as more obvious forms of censorship, and of external as well as internal attempts to influence or subvert public consciousness in a given society. (Also listed as Philosophy 32.290.)

Not offered 1986-87.

**Mass Communication 27.305★****International Media Systems**

This course is concerned with the flow of world news—how it is collected, transmitted, received, selected, edited and distributed; how it informs or inhibits our views of the world around us. It examines the relationship and dependence of Canadian media on regional and international institutions and systems. It examines such items as media systems; the role of international news agencies; the role of global telecommunication systems; the foreign news-gathering operations of national radio and television networks, and the inter-network arrangements for news distribution; the role of supranational media institutions such as UNESCO, the International Press Institute, the Inter-American Press Association and the International Organization of Journalists; the role of regional distribution agencies such as Intervision, Eurovision, European Broadcasting Union, Asian Broadcasting Union. (Also listed as Journalism 28.305★.)

Prerequisite: One of Journalism 28.100, 28.200, Mass Communication 27.111, 27.211 or permission of the Mass Communication program.

**Mass Communication 27.306★****Comparative Media Studies**

This course is concerned with comparisons of media content, organization or operation. Comparisons may be cross-cultural in nature (i.e. comparisons of English and French-Canadian media content), cross-media (i.e. comparisons of broadcast and print media organizations), cross-national (i.e. comparisons of media operations in various countries) or a mixture of these. There may also be comparisons over time. Some time is spent examining and employing research tools and methods used in these studies. (Also listed as Journalism 28.306★.)

Prerequisites: One of Journalism 28.100, 28.200, Mass Communication 27.111, 27.211 or permission of the Mass Communication program.

**Mass Communication 27.311****Advanced Study of the Mass Media**

An examination of the philosophical and theoretical foundations of mass communication studies. The course is an analysis of the content of selected theories with a view to assessing the contributions they make to the understanding of mass communication. (Also listed as Sociology-Anthropology 56.311.)

Prerequisites: Mass Communication 27.211 and Major or Honours standing in Mass Communication or permission of the Mass Communication program.

Lecture and discussion groups three hours a week.

**Mass Communication 27.343★****Communication Technology and Culture**

An examination of the relationship between communication technology and society. The course examines the factors that contribute to changes in the collection, storage and distribution of information and their cultural implications.

Prerequisites: Mass Communication 27.211 or permission of the Mass Communication program.

Seminar three hours a week.

Mass Communication 27.351★

**Communications Law I**

This course is concerned with the general laws governing the mass media in Canada, with attention to their effect on freedom of expression. Specific topics for examination include: contempt of court, free press, fair trial; revealing of sources; civil defamation; criminal libel; obscenity and censorship; copyright privacy; government secrecy; the law of advertising. (Also listed as Journalism 28.351★ and Law 51.351★.)

Prerequisite: Permission of the Mass Communication program.

Day division, Fall term: Lectures and discussions three hours a week.

Mass Communication 27.352★

**Communications Law II**

The law as it affects the Canadian broadcasting and communications industry. The primary focus of the course is on the operations of the Canadian Radio-Television and Telecommunications Commission. Specific topics for examination may include: administrative formulation of policy; multiple, monopoly and foreign ownership; control of program content (violence, obscenity, "good taste," food and drug commercials, liquor advertising, indirect censorship); controlling program quality; the provision of a right of access to the media; cablevision licensing and control; alternative sanctions. (Also listed as Journalism 28.352★ and Law 51.352★.)

Prerequisite: Permission of the Mass Communication program.

Evening division, Winter term: Lectures and discussion three hours a week.

Mass Communication 27.355★

**Media and Gender**

An examination of the role of mass media in shaping our conceptions of gender roles, and an evaluation of the social, political and cultural consequences of such conceptions. Topics to be considered include: male and female images in media content; the relative status of men and women within media professions; organizational and institutional factors in the treatment of gender; regulatory policies and possibilities concerning the gender issue within media institutions.

Prerequisite: Mass Communication 27.211 or permission of the Mass Communication program.

Lectures and discussion three hours a week.

Mass Communication 27.357★

**Special Topic**

An examination of a special topic in mass communication not covered in depth in other courses. The topic varies from year to year. Possible topics include: communications policy analysis; the political economy of the mass media; and the social impact of new communications technology.

Prerequisite: Mass Communication 27.211 or permission of the Mass Communication program.

Mass Communication 27.401

**Advanced Media Research**

An advanced study of specific methodological issues and statistical techniques appropriate to the investigation of theoretical questions concerning mass communication and society. The course is primarily concerned with the selection of appropriate methodologies and models for investigating specific questions and for this reason the content of the seminar changes somewhat from year to year. Among the topics that may be considered are content analysis, multivariate analysis, scale construction

techniques, path analysis and experimental and survey design.

Prerequisites: Mass Communication 27.201, 27.311 and Honours standing in Mass Communication or permission of the Mass Communication program.

Mass Communication 27.411

**Selected Problems in Mass-Communication Analysis**

Selected topics in Mass Communication. Topic for 1986-87 to be announced.

Prerequisites: Mass Communication 27.311 and Honours standing in Mass Communication or permission of the Mass Communication program.

Seminar three hours a week.

Mass Communication 27.431

**Communication Policy**

The course examines the factors that shape the development and maintenance of Canadian communication and cultural policies and practices. The regulatory process and state management of communication and cultural industries are evaluated. The course provides an overview of the analytical literature as it relates to specific cases of policy formation. The policy cases vary from year to year. (Also listed as Sociology-Anthropology 56.431.)

Precludes credit for Mass Communication 27.411 or Sociology-Anthropology 56.411 taken prior to 1986-87.

Prerequisites: Mass Communication 27.311 and Honours standing in Mass Communication or permission of the Mass Communication program.

Seminar three hours a week.

Mass Communication 27.497

**Honours Essay**

The Honours Essay, which is a major research essay, is carried out under the direction of a faculty supervisor. The Honours Essay is evaluated by both the supervisor and an appointed reader.

Prerequisite: Final-year Honours standing in Mass Communication.\*

\*Students should refer to general Faculty of Arts regulations regarding submission of Honours Essays, (p. 89).



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## Bachelor of Arts Programs

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The Department of Mathematics and Statistics (Faculty of Science) offers a wide variety of programs leading to Bachelor of Arts Major and Honours degrees, as well as Bachelor of Science degrees. The following is a list and short description of the arts programs that are available:

### Mathematics (Major and Honours B.A.)

The B.A. Major programs emphasize methods and applications, whereas the B.A. Honours programs emphasize theoretical aspects and serve as an introduction to graduate studies. The main areas of concentration are algebra, analysis, topology, applied mathematics (classical and modern), statistics and probability. Of particular interest may be the Combined Honours programs such as:

#### Economics and Mathematics (Honours B.A.)

#### Mathematics and Philosophy (Honours B.A.)

For these two Combined Honours programs, the minimum requirements have been specified (see p. 367).

It is in fact possible to combine studies in Mathematics with almost any other department in the Faculties of Arts or Social Sciences at both the Major and Honours levels, subject to the approval of the course selections by the respective departments.

### Computer Mathematics (Major and Honours B.A.)

The Major and Honours B.A. programs in Computer Mathematics are designed to provide a student with a background of computer-related mathematical ideas together with a firm base of computer science. These programs may be of interest to students who are preparing for careers in government, industry, management, or systems analysis.

### Statistics (Honours B.A.)

This program leads to an Honours B.A. degree and is designed primarily for a student who wishes to prepare for a career as a professional statistician.

### Operations Research (Honours B.A.)

This program is devoted to the professional discipline which deals with the scientific aspects of planning and decision-making and leads to an Honours B.A. degree. (See also p. 211.)

Students wishing more details on these or other programs offered through the Faculty of Science should consult pp. 379-380. For further information contact the Departmental Undergraduate Adviser.

# Department of Music

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## Officers of Instruction

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### *Chairman*

Bryan Gillingham

### *Associate Professors*

Patrick Cardy

Bryan Gillingham

Alan Gillmor

Elaine Keillor

David Piper

John Shepherd

### *Adjunct Professor*

Helmut Kallmann (*National Library of Canada*)

### *Sessional Lecturers*

Michael Bussière

Jennifer Giles

David Johnstone

Ann Schau

### *Director of Carleton Concert Band*

Peter Manley

### *Director of Early Music Consorts*

Barbara Zuchowicz

### *Director of Performance Studies*

Verna Jacobson

### *Instrumental and Vocal Instructors*

#### *Bass Guitar*

Ken Kanwisher

#### *Bassoon*

Gerald Corey

Michael Namer

#### *Cello*

Barbara Zuchowicz

#### *Clarinet*

Peter Smith

Mary Wegg

#### *Conducting*

James Wegg

#### *Double Bass*

Edward Hounsell

#### *Flute*

Jean-Guy Brault

Susan Morse

#### *French Horn*

Nat Battersby

#### *Guitar*

John Dykes

David Johnstone

Douglas Reach

#### *Harp*

Manon LeComte

#### *Harpsichord*

Karen Holmes

#### *Lute*

John Dykes

#### *Oboe*

Veronica Milroy

#### *Organ*

Godfrey Hewitt

#### *Percussion*

Ian Bernard

#### *Piano*

Barbara Gaizauskas

Verna Jacobson

Dina Namer

Christina Petrowska

Ann Schau

Irene Woodburn-Wright

#### *Recorder*

Gerald Corey

Anna Feldman

Barbara Gaizauskas

#### *Saxophone*

Peter Smith

#### *Trombone*

Drummond Hudson

#### *Trumpet*

Robert Oades

#### *Tuba*

Nicholas Atkinson

#### *Viola da gamba*

Donald Beecher

#### *Violin/Viola*

Joan Milkson

#### *Voice*

Susanna Burton

Donna Klimoska

Gloria Jean Nagy

Barbara Ross

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## General Information

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The purpose of the programs offered by the Department is to promote an intellectual, aesthetic and emotional understanding of music as an expression of human cultural activity. All students will be encouraged to examine the meanings and motivations of the art and to develop their speculative and critical responses to it in both historical and contemporary contexts. Stated briefly, the Department wishes to offer flexibility of choice and emphasis in programs that foster a basic grasp of the nature of musical processes from historical, social, practical and artistic points of view.

In addition to its undergraduate programs, the Department offers courses at the graduate level in the history of Canadian music in co-operation with the Institute of Canadian Studies.

The Department also sponsors a variety of non-credit performing groups including the *Carleton University*



*Chorus, Medieval Consort, Renaissance Consort, Baroque Ensembles, Madrigal Singers, Viol Consort, Concert Band, and Contemporary Music Groups*, all of which are open to Carleton students and members of the community. B.Mus and B.A. (Option A) students are required to belong to at least one such group in each year of residency. Students are also expected to attend weekly noon-hour concerts and occasional guest lectures. Copies of the departmental handbook will be available in the office in September of each academic year; students are expected to consult it for further information.

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### Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all departmental regulations and requirements as set out below.

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### Major Programs (B.A.)

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All prospective First-year students should consult the Department for advice concerning the choice of options below.

The Major program in Music consists of seven credits in Music as follows:

#### Option A

1. Music 30.100, 30.150 to be taken during the First year;
2. Music 30.190★;
3. three credits from Music 30.210★ to 30.260;
4. students under this option may not take Music 30.295★;
5. one and a half credits to be chosen from the 300 level or above.

#### Option B

1. Music 30.100;
2. three credits from Music 30.210★ to 30.231★;
3. Music 30.320;
4. one additional credit at the 300 level or above;
5. one other credit in Music.

#### Note:

No performance courses are allowed under this option.

### Combined Majors

Major programs combining Music with another subject must include at least four credits in Music: Music 30.100, two credits at the 200 level and one credit at the 300 level or above. Combined Majors students are not eligible for performance courses.

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### Honours in Music (B.Mus.)

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All prospective students should have an appreciable background in practical music-making and must consult the Department before entering this program.

1. The B.Mus. program in Music requires a minimum of 11 credits in Music, as follows:
  - (a) Music 30.100, 30.150 and 30.190★;

- (b) Music 30.250 and 30.290★;
- (c) courses totalling four credits from the following list, normally to be completed before the end of Third year: Music 30.210★, 30.211★, 30.212★, 30.213★, 30.214★, 30.215★, 30.216★, 30.223★, 30.225★, 30.226★, 30.227★, 30.228★, 30.229★, 30.230★, 30.231★, 30.260;
- (d) one credit chosen from Music 30.320, 30.350, 30.355 or 30.360;
- (e) Music 30.390★; and either 30.490★ or 30.497;
- (f) one of Music 30.496 (Honours Portfolio in Composition), 30.497 (Graduating Recital) or 30.498 (Honours Essay in Musicology), each of which carries double weight in assessing the class of degree;
- (g) Those who elect to take Music 30.497 (and are thus precluded from taking 30.490★) must complete an additional half credit in Music.

2. B.Mus. students are also required:

- (a) to complete one credit, or the equivalent thereof, in a language other than English. Students contemplating graduate study are strongly advised to develop further their language skills;
- (b) to undertake work in other disciplines.

3. B.Mus. students are required to attain a 6.5 grade-point average in the required Music courses in order to graduate. Students transferring into the B.Mus. program should also have achieved at least a 6.5 grade-point average in Music courses.

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### Honours in Music (B.A. Hons.)

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All prospective students must consult the Department.

1. The B.A. Honours program in Music normally requires 11 credits in Music as follows:

- (a) Music 30.100;
- (b) four credits to be chosen from courses numbered Music 30.210★ to 30.231★ (inclusive);
- (c) Music 30.320;
- (d) two credits in Music courses numbered 300 or above;
- (e) Music 30.498;
- (f) two other credits in Music.

#### Note:

Students in this degree program *may not* register for performance courses.

2. Honours students will also be required:

- (a) to complete a minimum of one credit, or equivalent thereof, in a language other than English. Students contemplating graduate study are strongly advised to develop further their language skills and to consult the Department for guidance;
- (b) to complete at least three credits (including a above) in a discipline or disciplines other than Music.

3. B.A. Honours students must attain a 6.5 grade-point average in the required Music courses in order to graduate. Music 30.498 is double-weighted in calculating the grade-point average.

4. Students transferring into the B.A. Honours program must have achieved at least a 6.0 grade-point average in Music courses.

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### Combined Honours Programs (B.A. Hons.)

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Students who wish to propose a Combined Honours program must consult the Department. They will be

required to take six credits in Music, which must include Music 30.100, 30.496 or 30.498, at least two credits at the 200 level and two credits at the 300 level or above. Students in the Combined Honours program are not eligible for the performance courses.

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## Diploma in Music

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This program is designed to attract individuals who have a strong background in performance on a musical instrument or voice, have been involved in the teaching of music, and who are desirous of obtaining additional academic qualifications. The program consists of five credits as listed below plus a graduating recital approximately 30 minutes in length. This recital is conducted on a pass/fail basis and will include *viva voce* questions related to the diploma requirements.

Courses taken for the Diploma are normally creditable towards a Bachelor of Arts or Bachelor of Music degree and a transfer student from the Diploma program into a degree program will normally be required to take at least ten (or, in the case of B.Mus. or B.A. Hons., 15 ) further credits in addition to those required by the Diploma.

If a student already holds a degree in Music, such a student must take for the Diploma five credits other than those already completed. Permission of the Department is required for the choice of these five credits.

### Admission Requirements

Applicants will be admitted on the basis of an audition to be held in the spring of each year. Although normal admission requirements are senior matriculation and an adequate level of performance, special consideration will be extended to other applicants under mature matriculation regulations.

### Program Requirements

1. One Music theory credit (normally Music 30.150);
2. Two Music history credits (normally Music 30.100 plus one credit at the 200 level);
3. One credit in Music performance (Music 30.495);
4. One credit Music elective (to be chosen in consultation with the Department);
5. A recital of approximately 30 minutes duration plus a *viva voce* examination on aspects of the program. This requirement is conducted entirely on a pass/fail basis and no grade is awarded.

Candidates must complete at least four of these (including Music 30.495) at Carleton University.

### Academic Standing

A student for the Diploma must obtain a grade-point average of 6.0 or better in at least four of the five required courses.

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## Courses Offered

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The majority of courses are open to non-Majors; students are advised to consult the Department.

Music 30.100

### Introduction to Music

This course provides a general survey of musics of

various civilizations, from historical and contemporary viewpoints. The content includes European music from the Middle Ages to the present, Canadian music, popular musics, and the music of other cultures. There is strong emphasis on the listening experience.

Day and Evening divisions: Lectures three hours a week.  
*A. Gillmor, A. Schau*

Music 30.115

### Elementary Materials of Music

A course for those who, although interested in the theory of music, have had no opportunity to study it systematically. Rudiments, elementary harmony and basics of melodic writing are taught in the theoretical part of the course. There is also practical study on piano or guitar as well as aural training and elementary musical dictation. The emphasis throughout is on analytical listening. This course is not accepted, even as an option, toward the requirements of a Major or Honours degree in Music. Evening division: Lectures one and a half hours and one hour of practical work a week.

*D. Johnstone*

Music 30.150

### Materials and Techniques of Music I

A theoretical and practical study of rhythm, melody, harmony, counterpoint and structures of tonal music. Aural training, sight singing, keyboard harmony and the writing of music are pursued.

Prerequisite: Music 30.115 or equivalent.

Theory class two hours a week, aural training and sight singing two hours a week, and keyboard musicianship one hour a week.

*P. Cardy*

Music 30.190★

### Performance I

Vocal or instrumental instruction for Music Majors (Option A) and B.Mus. students only. A reasonable standard of ability is required on entry, and every prospective student is required to consult the Performance Director (a brief audition may be required) to ensure appropriate placement with a teacher. A brief prepared recital before a jury of faculty members is required at the end of the year. Individual tuition, one half hour a week.

Music 30.195★

### Secondary Performance I

Instruction for Music Majors (Option A) and B. Mus. students only, in a second instrument of their choice. Tuition is normally offered on a group basis. Areas of concentration from which students may choose are: keyboard, woodwinds, brass, strings, voice, historical instruments, and percussion.

Group tuition up to one hour a week.

Music 30.210★

### Music in the Middle Ages

A survey of European music from the beginning of the Christian era to the end of the fourteenth century, including the study of secular monophony, liturgical music and medieval polyphony.

Prerequisite: Music 30.100 or permission of the Department.

Evening division, Fall term: Lectures three hours a week.  
*B. Gillingham*

Music 30.211★

### Music in the Renaissance

The development of vocal and instrumental music from 1400 to 1600, including examination of the important



works by the Masters of the Burgundian and Flemish schools, of Roman and Protestant church music, of the Italian madrigal, the French chanson and Elizabethan music.

Prerequisite: Music 30.100 or permission of the Department.

Evening division, Winter term: Lectures three hours a week.

*B. Gillingham*

Music 30.212★

### **Music in the Baroque Era**

A survey of European music and its environment from approximately 1600 to the deaths of Bach and Handel. Topics include: secular vocal music; solo and concerted instrumental music; music for the Catholic and Protestant churches; the music and significance of major personalities from Monteverdi and Schutz to Bach and Handel. Prerequisite: Music 30.100 or permission of the Department.

Evening division, Fall term: Lectures three hours a week.

*E. Keillor*

Music 30.213★

### **Music in the Classical Era**

A study of European music from the early eighteenth century to the beginning of Romanticism. The evolution of the Classical style is traced in the important works of composers from the 1720s to the Viennese school of Haydn, Mozart and Beethoven.

Prerequisite: Music 30.100 or permission of the Department.

Evening division, Winter term: Lectures three hours a week.

*E. Keillor*

Music 30.214★

### **Music in the Romantic Era**

A survey of European music from the age of Beethoven to the late nineteenth century. Important genres (opera, art-song, symphony and symphonic poem) as well as individual and national styles are examined in the context of the socio-political climate of the period.

Prerequisite: Music 30.100 or permission of the Department.

Day division, Fall term: Lectures three hours a week.

*A. Gillmor*

Music 30.215★

### **Twentieth-Century Music to World War II**

Music from 1900 to circa 1945, including an examination of modern idioms from Debussyan impressionism to Viennese expressionism, nationalism and Stravinskyan neoclassicism.

Prerequisite: Music 30.100 or permission of the Department.

Day division, Winter term: Lectures three hours a week.

*A. Gillmor*

Music 30.216★

### **Music Since World War II**

A study of selected aspects of the musical avant-garde in the Western classical tradition since circa 1945, including post-Webern serialism, colouristic and textural composition, music of political commitment, electronic music, musical theatre, process music and the music of chance. Prerequisite: Music 30.100 or permission of the Department.

Day division, Winter term: Lectures three hours a week.

*D. Piper*

Music 30.223★

### **The Blues**

An examination of the Blues from their roots in pre-twentieth century black music to the advent of soul. Principal topics to be surveyed include Delta Blues, Texas Blues, City and Classic Blues of the 1920s, the growth of blues bands in the 1930s, the impact of electronic instruments, Chicago Blues of the late 1930s and 1940s, Texas urban Blues, and the emergence of Rhythm and Blues.

Prerequisite: Music 30.100 or permission of the Department.

Not offered 1986-87.

Music 30.225★

### **Ragtime and Jazz**

A survey of ragtime and jazz from their roots in pre-twentieth-century black music to the music of Miles Davis and John Coltrane, including an examination of the music of such representative figures as Scott Joplin, Jelly Roll Morton, King Oliver, Louis Armstrong, the Original Dixieland Jazz Band, Fletcher Henderson, Duke Ellington, Benny Goodman, Count Basie, Charlie Parker, Dizzie Gillespie and the Modern Jazz Quartet.

Prerequisite: Music 30.100 or permission of the Department.

Not offered 1986-87.

Music 30.226★

### **Commercial Music 1890-1955**

A survey of commercial popular music from the inception of the music industry in the U.S.A. and the U.K. in the late 1890s to the advent of rock 'n' roll in 1954. Topics to be examined include: the rise of North-American vaudeville, the changing nature of the sentimental ballad, the adoption for commercial ends of various Afro-American styles such as ragtime, blues, 1920's jazz and 1930's swing, the emergence of dance as mass entertainment, Broadway, Hollywood, the impact of copyright laws and the influence of musicians' unions.

Prerequisite: Music 30.100 or permission of the Department.

Not offered 1986-87.

Music 30.227★

### **Rock Music**

A survey of the history of Rock music from its beginnings in Country music and black Rhythm and Blues until the present. Sub-genres included in the study are early Rock 'n' Roll, British Rhythm and Blues, Heavy Metal, Punk, New Wave and Progressive Rock.

Prerequisite: Music 30.100 or permission of the Department.

Evening division, Fall term: Lectures three hours a week.

*P. Cardy, A. Gillmor, J. Shepherd*

Music 30.228★

### **Country, and Country and Western**

A survey of the history of American country music from its beginnings as a legacy of the folk music of the British Isles and Ireland, through its early development as a force in commercial music through figures such as Roy Acuff, to its present status as a popular music of middle America.

Prerequisite: Music 30.100 or permission of the Department.

Evening division, Winter term: Lectures three hours a week.

*J. Shepherd*

Music 30.229★

**Soul**

A survey of the history of Soul from its beginnings as a fusion of Rhythm and Blues and Gospel in the late 1950s, through its early commercial manifestations (Motown) to the development of different sub-genres of black American popular music in the 1970s and 1980s.

Prerequisite: Music 30.100 or permission of the Department.

Not offered 1986-87.

Music 30.230★ (part 30.315)

**An Introduction to Ethnomusicology**

The basic techniques in ethnomusicology are introduced and illustrated through a survey of the folk and tribal musics of Europe, Asia, Africa, Australia and Oceania, North and South America.

Precludes additional credit for Music 30.315 taken prior to 1986-87.

Prerequisite: Music 30.100 or permission of the Department.

Not offered 1986-87.

Music 30.231★ (part 30.315)

**Music of the Asian High Cultures**

A comparative and analytical study of music in Asian high cultures including India, China, Korea, Indonesia and Japan, through an examination of the music, musical instruments and theoretical systems.

Precludes additional credit for Music 30.315 taken prior to 1986-87.

Prerequisite: Music 30.100 or permission of the Department.

Not offered 1986-87.

Music 30.250

**Materials and Techniques of Music II**

A continuation of Music 30.150. Styles and techniques of the common practice period form the core of the studies, but attention is also paid to other styles. These studies are pursued through aural training, sight singing, practical musicianship at the keyboard, and written work.

Prerequisite: Music 30.150 with a grade of at least C+ or permission of the Department.

Day division: Theory class two hours a week, aural training and sight singing two hours a week, and keyboard musicianship one hour a week.

*D. Piper*

Music 30.260

**Composition I**

An introductory course designed to enable students to develop abilities in the writing of original music. The study and application of modern and contemporary styles and techniques are emphasized.

Prerequisite: Music 30.150 or permission of the Department.

Day division: Lectures and seminars three hours a week.

*P. Cardy, D. Piper*

Music 30.290★

**Performance II**

A continuation of Music 30.190★ for Music Majors (Option A) and B.Mus. students only. A brief prepared recital before a jury of faculty members is required at the end of the year.

Prerequisite: Music 30.190★ or permission of the Department.

Individual tuition, one half hour a week.

Music 30.295★

**Secondary Performance II**

A continuation of Music 30.195★ for B.Mus. students only.

Prerequisite: Music 30.195★.

Group tuition up to one hour a week.

Music 30.310

**Music in Canada**

The story of Western music in Canada, from the earliest references by Europeans during the sixteenth century up to our own time with special emphasis on compositions of the post-1945 period. Topics include: the sacred and secular traditions of the seventeenth and eighteenth centuries; the cultivated and vernacular traditions of the nineteenth century; MacMillan, Willan and Champagne; the new trends of Papineau-Couture, Pentland and Weinzwieg; Schafer and the contemporary soundscape; influences from American experimentalists and the Far East; and Canada's role in the development of electronic music.

Day division: Lectures three hours a week.

*E. Keillor*

Music 30.312★ (30.312)

**Music in the United States in the Twentieth Century**

A survey of contemporary American music. Topics include: Ives and the experimental tradition, Copland, Thomson, Harris and the American nationalists; the neoclassicists and neoromantics; Gershwin and the third stream; and post-1945 developments in serialism, electronic music, minimalism, and indeterminacy.

Precludes additional credit for Music 30.312 taken before 1986-87.

Prerequisite: Music 30.100 or permission of the Department.

Day division, Winter term: Lectures three hours a week.

*A. Gillmor*

Music 30.320

**Music and Culture**

An examination of methods of elucidating the meaning and significance of different musical styles and systems in their social and cultural contexts. Principal topics to be addressed include sociological, semiological and structuralist approaches to the technical analyses of different musical traditions and major forces affecting the production and consumption of music.

Prerequisite: Permission of the Department.

Day division: Lectures three hours a week.

*J. Shepherd*

Music 30.340★

**A History of Opera before 1800**

A survey of the development of opera from the beginnings to about 1800. The course deals with the major monuments of Italian, French, German and English opera, by such composers as Monteverdi, Cavalli, Scarlatti, Purcell, Lully, Gluck, Rameau, Mozart and Haydn.

Not offered 1986-87.

Music 30.341★

**A History of Opera from 1800 to the Present**

A study of the modern operatic tradition from approximately 1800 to the present day, including such topics as German romantic opera, French grand opera, Italian lyricism and verismo, Russian realism and German expressionism, Brecht, Weill and Marxism, Britten and the English school.

Day division, Fall term: Lectures three hours a week.

*A. Gillmor*



Music 30.342★

### **A History of the Madrigal**

A study of the development of the madrigal and its social milieu from its earliest stages to the middle of the seventeenth century through a detailed examination of selected works from the Italian and English schools.

Prerequisite: Music 30.211★.

Not offered 1986-87.

Music 30.350

### **Materials and Techniques of Music III**

In part, a continuation of Music 30.250, but introducing non-common-practice areas such as medieval, renaissance, impressionistic, atonal, serial and contemporary techniques. The course is run on a workshop basis with a high level of student participation in analysis, composition, performance, and critical discussion.

Prerequisite: Music 30.250 with a grade of at least C+ or permission of the Department.

Day division: Seminar three hours a week.

*B. Gillingham*

Music 30.355

### **Stylistic and Structural Analysis**

A study of techniques of musical structure and their application in historical and contemporary styles.

Prerequisite: Music 30.150, some or all of 30.210★ to 30.216★, or permission of the Department.

Day division: Lectures three hours a week.

*D. Piper*

Music 30.360

### **Composition II**

In part a continuation of Music 30.260, but more emphasis is placed on developing the student's own creative personality.

Prerequisites: Music 30.250, 30.260 and either 30.215★ or 30.216★; or permission of the Department.

Day division: Seminar plus small-group tutorial two hours a week.

*P. Cardy, D. Piper*

Music 30.361

### **Orchestration**

A study of the instruments of the orchestra, their historical background, ranges and technical abilities, as well as work in the development of fluency in score-reading and analysis. Students apply the techniques studied to the preparation of assignments involving the orchestration, for various small and large ensembles, of works from a variety of historical periods.

Prerequisite: Permission of the Department.

Day division: Lectures three hours a week.

*P. Cardy*

Music 30.362

### **Electro-Acoustic Music Studio Techniques**

A study of electro-acoustic music techniques used in composition and performance in the studio medium. The course includes the study of tape music, electronic music, electronic instruments and sound processing. Enrolment in this course is limited.

Prerequisite: Permission of the Department.

Day division: Lectures three hours a week, plus individual studio time.

*D. Johnstone*

Music 30.363★

### **Computer Music I**

An introduction to the techniques of digital sound synthesis through practical experience at the computer.

After instruction in the basics of machine operation, students are assigned individual computer time in order to experiment with the various aspects of sound production. A background in computer science or mathematics is not essential. Enrolment in this course is limited.

Prerequisite: Music 30.216★ or permission of the Department.

Day division, Fall term: Lectures three hours a week plus individual studio time.

*M. Bussière*

Music 30.364★

### **Computer Music II**

A continuation of Music 30.363★. The various applications of the computer in contemporary music are examined. Topics include: the development of computer music, digital sound synthesis, structural music, programmed music, computer-assisted composition, and various composition programs. Enrolment in this course is limited.

Prerequisite: Music 30.363★ or permission of the department.

Day division, Winter term: Lectures three hours a week plus individual studio time.

*M. Bussière*

Music 30.390★

### **Performance III**

A continuation of Music 30.290★ for B.Mus. and B.A. (Option A) students only. A brief prepared recital before a jury is required at the end of the year.

Prerequisite: Music 30.290★ or permission of the Department.

Individual tuition one hour a week.

Music 30.420★ to 30.424★

### **Special Topics**

Courses focusing on one selected aspect of music, in the area of either musicology, theory or composition. The course offerings change from year to year.

Prerequisite: Permission of the Department.

Music 30.423★

### **Special Topic: Nineteenth Century Piano Music**

An examination of romantic piano music in the nineteenth century, with special emphasis on Chopin and Liszt.

Day division, Winter term: Lectures three hours a week.

*E. Keillor*

Music 30.425★ to 30.429★

### **Specialized Studies**

Courses designed specifically for music Honours students who have acquired an extensive background through courses in theory, musicology or composition. The course offerings change from year to year.

Prerequisite: Permission of the Department.

Music 30.430★

### **Notation of Medieval and Renaissance Music**

An introduction to the notation of medieval and renaissance music with emphasis on the major paleographic and transcriptional problems to be encountered in early chant notation, square and Franconian notations, the innovations of the Ars Nova and mannerist phases, white notation, and various lute tablatures. Examples are selected, for detailed study and transcription, from the ninth to sixteenth centuries.

Prerequisite: Music 30.210★ or permission of the Department.

Not offered 1986-87.

Music 30.431★

**Twentieth-Century Musical Notation**

A seminar in twentieth-century notation, considering the modification of existing systems to accommodate new compositional and performance practices and the development of new systems. Topics discussed include the psychology of notation, information theory in music, classification systems, graphic notation, indeterminate scores and calligraphic techniques.

Prerequisite: Music 30.216★ or permission of the Department.

Not offered 1986-87.

Music 30.450

**Materials and Techniques of Music IV**

A continuation of Music 30.350 proceeding to the writing of extended works in a variety of idioms from the early Renaissance to the twentieth century. The emphasis is less on the production of original compositions than on the study of stylistic compositional techniques through analysis and pastiche writing. A measure of continuo realization and editorial procedures is included.

Prerequisite: Music 30.350 with a grade of at least C+ or permission of the Department.

Not offered 1986-87.

Music 30.455

**Advanced Analysis**

A continuation of Music 30.355 to include an in-depth analysis of a small number of selected works chosen from some or all of the major historical periods from the Middle Ages to the contemporary avant-garde.

Prerequisite: Music 30.355.

Not offered 1986-87.

Music 30.460

**Composition III**

A continuation of Music 30.360 for students who possess a displayed aptitude for composition. The course centres around the writing of original works of substantial proportions and for a variety of media. Students are encouraged to prepare some of their music for public performance.

Prerequisite: Permission of the Department.

Small-group tutorial one hour a week.

*P. Cardy, D. Piper*

Music 30.471★

**Music as Social Knowledge**

This course examines music as social knowledge from the perspective of sociology of knowledge. The principal topic to be examined is the attitude of different groups to different styles of music. A substantial part of the course is given over to a consideration of recent work in the sociology of music education.

Prerequisite: Permission of the Department.

Not offered 1986-87.

Music 30.472★

**Theory and Method in Musicology**

This course traces the historical development of the sub-disciplines of historical musicology, ethnomusicology and sociomusicology, and critically examines the different theories and methods to which these sub-disciplines have given rise.

Prerequisite: Permission of the Department.

Day division, Fall term: Lectures three hours a week.

*J. Shepherd*

Music 30.490★

**Performance IV**

A continuation of Music 30.390★ for B.Mus. students only. A brief prepared recital before a jury is required at the end of the year. This course may *not* be taken in addition to or concurrently with Music 30.497.

Prerequisite: Music 30.390★ or permission of the Department.

Individual tuition one hour a week.

Music 30.495

**Performance (Diploma in Music)**

A full credit in performance designed exclusively for Diploma in Music candidates.

Individual tuition one hour a week.

Music 30.496

**Honours Portfolio in Composition**

A project involving the preparation, performance and written analysis (of approximately 20 pages) of an original work (or works) of substantial length, prepared in consultation with the Department and an assigned adviser. This course is meant only for students who have demonstrated an aptitude for composition.

Prerequisite: Permission of the Department.

Music 30.497

**Graduating Recital**

Open only to B.Mus. students who have demonstrated a strong aptitude for performance. The course requires preparation of a public performance of at least one hour duration arranged in consultation with Director of Performance Studies and teacher.

Prerequisite: Permission of the Department.

Individual tuition one hour a week.

Music 30.498

**Honours Essay in Musicology**

An Honours research essay of approximately 50 pages in length on a topic chosen in consultation with the Department and an assigned supervisor. A high level of personal research and subsequent presentation is required.

Music 30.510, 30.511★, 30.512★, 30.513★

**Graduate Studies in Canadian Music**

See Graduate Studies and Research Calendar.



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## Program Co-ordinator

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I. Pressman  
Department of Mathematics and Statistics  
Room 823 Arts Tower

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## General Information

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This program leads to either a B.A. Honours or B.Sc. Honours degree.

Operations research is the generic name given to a wide range of activities associated with planning and decision-making. The techniques used are many and varied. They include mathematical modelling, optimization, statistical analysis, stochastic processes and computer simulation.

This career-oriented program, while giving a strong base in the above techniques, exposes the student to various applications, including economics and management studies.

The program at Carleton will appeal to students who are good in mathematics and who are interested in computing and the application of mathematical techniques to real-life situations. Graduates of the program will also receive the *Diploma in Operations Research* from the Canadian Operational Research Society and will be prepared for positions in a wide variety of industrial and governmental organizations; they will also be qualified to continue in a graduate program in operations research.

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## Admission Requirements

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The admission requirements for this program are the same as those specified for the B.A. Honours program (see p. 88) or the B.Sc. Honours program (see p. 328).

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## Course Requirements

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For full details of course requirements see p. 379.

# Department of Philosophy

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## Officers of Instruction

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*Chairperson*  
Andrew Jeffrey

*Majors Adviser*  
John W. Leyden

*Honours Adviser*  
James M. Thompson

*Graduate Studies Supervisor*  
Diane E. Dubrule

*Professors*  
Bernard Wand  
J.C.S. Wernham

*Associate Professors*  
J.A. Brook  
Stanley G. Clarke  
B.I. Egyed  
Marvin Glass  
Andrew Jeffrey  
Randal R.A. Marlin  
Stephen Talmage  
James M. Thompson  
J. Wolfe

*Assistant Professors*  
D.E. Dubrule  
John W. Leyden

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## Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all departmental regulations and requirements as set out below.

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## Courses Open to First Year Students

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The following courses are open to First-year students: Philosophy 32.100, 32.150, 32.200, 32.202 (full-credit courses); 32.101★, 32.102★, 32.103★, 32.106★, 32.107★, 32.201★, 32.203★, 32.209★ (half-credit courses). Please note that not all of these courses are offered each year. Credit will not be given for more than two credits at the 100 level.

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## Major Program

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Majors in Philosophy will present a minimum of six credits in Philosophy including five credits beyond the 100 level.

These credits must be chosen to include 1.0 credit in History of Philosophy. History of Philosophy courses are: 32.205, 32.215, 32.220, 32.225, 32.270, 32.305 and 32.380.

Special arrangements will be made for students proposing a Combined Major program. The normal requirement in philosophy is five credits, including four beyond the 100 level.

All Majors and Combined Majors will arrange their

programs in consultation with the Department.

Students who enter the Major program before the end of First year may not continue in it unless, before the beginning of Second year, they have obtained a grade of C- or better in one of the introductory courses in Philosophy. Students may not enter the Major program at the end of First year or later, unless they have obtained a grade of C- or better in one of the introductory courses in Philosophy.

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## Honours Program

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The Honours program may be entered at the beginning of the First year or by transfer from the Major program (p. 88). Students intending to enter the Honours program should include 1.0 credit in Philosophy at the 100 level in the First-year program. In certain circumstances this requirement will be waived for students entering the Honours or Combined Honours program after the First year, who may be permitted to substitute an upper-year credit in Philosophy.

The Honours program consists of a minimum of 20.0 credits. Of these at least 9.0 credits, including 8.0 credits beyond the 100 level, are courses in Philosophy. The program for the Second and subsequent years is planned in consultation with the Department. Courses must be chosen according to the following requirements:

1. 2.0 credits in history of philosophy;
2. 2.0 credits in problems in philosophy;
3. 1.0 credit in moral and/or political philosophy;
4. Either 1.0 credit in logic or 0.5 credit in logic and another 0.5 credit in philosophy;
5. 2.0 credits at the 400 or 500 level.

Courses falling within the foregoing groups are:

*History of philosophy:* 32.205, 32.215, 32.220, 32.225, 32.270, 32.305, 32.306★, 32.380;

*Problems in philosophy:* 32.200, 32.240, 32.245★, 32.246★, 32.251★, 32.252★, 32.260, 32.280, 32.284★, 32.290, 32.311★, 32.312★, 32.332★, 32.333★, 32.351★, 32.366★;

*Moral and/or political philosophy:* 32.202, 32.209★, 32.211★, 32.212★, 32.236★, 32.266★, 32.330;

*Logic:* 32.201★, 32.335.

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## Combined Honours Programs

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Combined Honours programs are available in Philosophy with the following subjects: Art History, English, History, Journalism, Law, Political Science, Greek, Economics, French, German, Mathematics, Psychology, Religion and Sociology-Anthropology. Special arrangements may be made for other combinations.

The Philosophy requirements are 7.0 credits, to include six beyond the First-year level including 1.0 credit at the 400 or 500 level. Details of these programs may be obtained from the Department.

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## Graduate Program

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The Department of Philosophy offers studies leading to the degree of Master of Arts. For information see the



Graduate Studies and Research Calendar, or consult the departmental Graduate Studies Supervisor.

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### Courses Offered

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#### Philosophy 32.100

##### **Themes in the History of Philosophy**

This course is designed to familiarize the student with philosophical issues through historically influential writings. The development of a number of themes is traced through the texts of major philosophers in the Western tradition. Among these themes are the nature and extent of human knowledge, the validity of religious beliefs and moral values, the nature of reality and the purpose and importance of philosophical thinking.

Day division: Lectures and discussion three hours a week.

S. Clarke, B. Wand

#### Philosophy 32.101★

##### **Ethics and Philosophy of Religion**

An examination of arguments for and against the existence of God; the nature of religious language and the meaning and justification of moral judgments.

Not offered 1986-87.

#### Philosophy 32.102★

##### **Knowledge and Meaning**

The justification of our belief in an external world and in the possibility of predicting the future, the nature of knowledge and of ultimate reality, the nature of language and the meaning of "meaning."

Not offered 1986-87.

#### Philosophy 32.103★

##### **Philosophical Texts I**

An examination, both historical and critical, of selected philosophical texts. Works to be studied include Plato, *The Republic* and Descartes, *Meditations*.

Evening division, Fall term: Lectures and discussion two and a half hours a week.

B.I. Egyed

#### Philosophy 32.106★

##### **Metaphysics and Truth**

A discussion of the following questions: how mind is related to body; what freedom is and whether it is possible; what truth is and how philosophical truths differ from truths of science.

Not offered 1986-87.

#### Philosophy 32.107★

##### **Philosophical Texts II**

An examination, both historical and critical, of selected philosophical texts. Works to be studied include Hume, *An Enquiry Concerning Human Understanding*; Ayer, *Language, Truth and Logic*.

Evening division, Winter term: Lectures and discussion two and a half hours a week.

J. Leyden

#### Philosophy 32.150

##### **Contemporary Moral, Social and Religious Issues**

A critical examination of some of the philosophical problems associated with such topical issues as feminism (e.g. marriage, the family, abortion and sexual ethics); atheism vs. theism; the meaning of life (e.g. existentialism); moral relativism vs. moral objectivism; egoistic vs. non-egoistic ethics (e.g. Ayn Rand and utilitarianism); eutha-

nasia and capital punishment; legal paternalism (e.g. "hard" and "soft" drugs, suicide, medicare); freedom of the will.

Day division: Lectures and discussion three hours a week.

Section A, M. Glass; Section B, D. Dubrule, J. Wolfe

#### Philosophy 32.200

##### **Science and the Human**

Topics include the scientific view of the world, scientific revolutions and the growth of knowledge and objectivity. Specific attention is paid to fundamental concepts such as observation, explanation, causation and induction. The course concludes with an examination of the biological and social sciences.

Open to First-year students.

Evening division: Lectures and discussion two and a half hours a week.

S. Clarke

#### Philosophy 32.201★

##### **Logic**

An introduction to the techniques and philosophical implications of formal logic with emphasis on the following issues: translation of expressions into symbolic form, formulation and application of the rules of valid inference, the relation between logic and language, and the nature of logical necessity.

Open to First-year students.

Lectures and workshops three hours a week.

Day division, Fall term.

B. Egyed

Day division, Winter term.

J. Wolfe

#### Philosophy 32.202

##### **Ideas of the Individual and Society in Canada**

An examination of Canadian ideas of the individual, culture and society in the context of their philosophical traditions. Emphasis is placed on the themes of nationalism; human interaction with the natural and technical environment; the individual's relation to the past, society and culture; and the ideological aspects of traditionalism, social reform and revolution. The following representatives of Canadian thinking, among others, are discussed: G. Grant, C.B. McPherson, F. Dumont.

Open to First-year students.

Evening division: Lectures and discussion two and a half hours a week.

Leslie Armour

#### Philosophy 32.203★

##### **Informal Reasoning**

A practical course to aid the student in the assessment of reasoning and the development of cogent patterns of thinking. Reference to formal logic is minimal and employed only where it will assist in clarification. A significant part of the course work is practice in criticizing examples of reasoning and in formulating one's own reasons correctly and clearly.

Open to First-year students.

Precludes additional credit for Philosophy 32.120 (no longer offered).

Lectures and workshops three hours a week.

Day division, Fall term.

J. Wolfe

Day division, Winter term.

J.W. Leyden

Philosophy 32.205

**Greek Philosophy**

An examination of early speculation in Greece, the roles of the Sophists and of Socrates, together with a study of selected topics in the works of Plato and Aristotle. (Also listed as Classical Civilization 13.240.)

Prerequisite: An introductory course in Philosophy or Second-year standing.

Day division: Lectures and discussion three hours a week.

*D. Dubrule, A. Jeffrey*

Philosophy 32.209★

**The Philosophy of Economic Activity**

An examination of economic activity as it relates to the principles of social organization, moral rules and religious attitudes. Among the themes receiving special attention are: the nature of property, competition and planning, the status of work, corporate rights and responsibilities, profits and social needs, and distributive justice.

Open to First-year students.

Not offered 1986-87.

Philosophy 32.211★

**History of Ethics**

An examination of historical discussions of some principal questions in moral philosophy: e.g. Hobbes on egoism and obligation, Butler on conscience, Kant on moral principles, Hume or J.S. Mill on utilitarianism.

Prerequisite: An introductory course in Philosophy or Second-year standing.

Day division, Fall term: Lectures and discussion three hours a week.

*J.C.S. Wernham*

Philosophy 32.212★

**Contemporary Ethical Theory**

A critical approach to the nature of morality, the meaning of moral language and the justification of moral claims studied through influential twentieth century writings. G.E. Moore, C.L. Stevenson, R.M. Hare and Philippa Foot set the context for more recent contributions.

Prerequisite: An introductory course in Philosophy or Second-year standing.

Day division, Winter term: Lectures and discussion three hours a week.

*B. Wand*

Philosophy 32.215

**Modern Philosophy: 1600-1800**

An examination of the major philosophical writers of the seventeenth and eighteenth centuries. Selections are studied from the works of Descartes, Spinoza, Leibniz, Locke, Berkeley, Hume.

Prerequisite: An introductory course in Philosophy.

Day division: Lectures and discussion three hours a week.

*J.C.S. Wernham, J. Wolfe*

Philosophy 32.220

**Introduction to Marxist Philosophy**

This course focuses primarily on the philosophical writings of Marx, Engels and Lenin. Materials used are intended to give the student an understanding of the Marxist world-outlook as a whole, and at the same time of the Marxist approach to such special branches of philosophy as theory of history, theory of knowledge, social and political philosophy, philosophy of science and ethics. Topics such as materialism vs. idealism, dialectical vs. non-dialectical thinking, absolute vs. relative truth, freedom vs. necessity, human nature, alienation,

and ideology will be discussed. Secondary source material includes the writings of both proponents and critics of Marxism.

Prerequisite: An introductory course in Philosophy or Second-year standing.

Day division: Lectures and discussion two and a half hours a week.

*M. Glass*

Philosophy 32.225

**Reason and Revelation**

A study of the evolution of western philosophy up to the end of the Renaissance. Theories of human nature, knowledge and reality are traced from the early rationalism of the Greeks through the syntheses of reason with Christianity in the Middle Ages to the humanist rationality of the Renaissance. In-depth studies are made of six important thinkers: Plotinus, Augustine, Thomas Aquinas, William of Ockham, Montaigne and Francis Bacon.

Prerequisite: An introductory course in Philosophy or Second-year standing.

Not offered 1986-87.

Philosophy 32.236★

**Philosophy and Feminism**

A study of philosophical issues arising from feminism. The course includes discussions of the relations between feminism, reason and ideological commitment, as well as critical evaluation of contemporary views on selected topics (e.g. abortion, pornography and censorship, affirmative action, and beauty).

Prerequisite: A course in Philosophy or Second-year standing.

Evening division, Winter term: Lectures and discussion two and a half hours a week.

*M. Glass*

Philosophy 32.240

**Aesthetics**

Analysis of problems in the description, interpretation and evaluation of works of art, including music, literature and the visual arts, together with the study of types of aesthetic theory.

Prerequisite: An introductory course in Philosophy or Second-year standing.

Day division: Lectures and discussion two hours a week.

*J.M. Thompson*

Philosophy 32.241★

**Aesthetics**

The first half of Philosophy 32.240, Aesthetics. (For Architecture students only.)

Prerequisite: Permission of the Department. Only for students who will take Philosophy 32.242★ in a later year.

Day division, Fall term: Lectures and discussion two hours a week.

*J.M. Thompson*

Philosophy 32.242★

**Aesthetics**

The second half of Philosophy 32.240, Aesthetics. (For Architecture students only.)

Prerequisite: Philosophy 32.241★.

Day division, Winter term: Lectures and discussion two hours a week.

*J.M. Thompson*



**Philosophy 32.245★**

**Philosophy of the Paranormal**

A philosophical examination of claims, concepts, theories and methods in parapsychology as well as astrology and other occult studies. Consideration is given to the question of their scientific character and the relation of paranormal and occult phenomena to philosophical issues such as survival of death, the immortality of the soul and human nature, time, space, causality and perception. Specific topics dealt with vary from year to year, but the following are likely to be included: telepathy, clairvoyance, precognition, retrocognition, psychokinesis, out-of-body experiences, mental mediumship, demonic possession, apparitions and time travel.

Prerequisite: An introductory course in Philosophy or Second-year standing.

Day division, Fall term: Lectures and discussion three hours a week.

*D. Dubrule*

**Philosophy 32.246★**

**Death**

A study of some major issues in philosophical thanatology. Problems considered include philosophical concepts of death, medical and legal definitions of death and the meaning and implications of some ways of dying: suicide, euthanasia, infanticide, abortion, murder and capital punishment. (Students are reminded of complementary courses: Philosophy 32.245★ and 32.251★ and Religion 34.238★.)

Prerequisite: An introductory course in Philosophy or Second-year standing.

Not offered 1986-87.

**Philosophy 32.251★**

**Personal Identity and the Self**

What is it to have a sense of one's own identity? What do we know of the self? What is personal identity and how is it related to responsibility, love, etc.? What is the relation of "mind" to body?

Prerequisite: An introductory course in Philosophy.

Day division, Fall term: Lectures and discussion three hours a week.

*S. Talmage*

**Philosophy 32.252★**

**Philosophy of Mind**

Topics are selected, in consultation with students in the course, from recent English-language work in the philosophy of mind, and often include: intentional systems, mental images and dreams, consciousness, artificial intelligence, self-deception, mental illness, and what it is to treat persons as persons, not things.

Prerequisite: Philosophy 32.251★.

Day division, Winter term: Lectures and discussion three hours a week.

*S. Talmage*

**Philosophy 32.260**

**Philosophy of Religion**

A philosophical examination of some characteristic concepts of religion, such as faith, hope, worship, revelation, miracle, God. (Also listed as Religion 34.260.)

Prerequisite: An introductory course in Philosophy or Second-year standing.

Not offered 1986-87.

**Philosophy 32.266★**

**Personal Ideals and Lifestyles**

Problems of describing, analyzing and evaluating personal ideals and lifestyles are investigated. Emphasis is

given to the works of Iris Murdoch and Albert Camus.

Day division, Fall term: Lectures and discussion three hours a week.

*S. Clarke*

**Philosophy 32.270**

**Existentialism and Phenomenology**

A study of recent and contemporary philosophical movements in continental Europe. An account is given of the historical origins of these movements in the thought of Kierkegaard and Husserl. Special attention is paid to the philosophy of Sartre. The views of Nietzsche, Heidegger, Camus and Merleau-Ponty, together with those of some of their commentators, are also discussed.

Prerequisite: An introductory course in Philosophy or Second-year standing.

Day division: Lectures and discussion three hours a week.

*R.R.A. Marlin*

**Philosophy 32.280**

**Language and Communication**

Among theories about the nature of language that the course examines are those of Skinner and the behaviourists; of Chomsky and other transformational-generative grammarians; and of the speech-act theorists. Among questions to which an answer is attempted are: What is language? What is meaning? What is it to communicate? Philosophical issues with respect to such topics as the following are considered: language and innate knowledge; language and culture; translation; the origins and acquisition of language; nonverbal communication; nonhuman language; machine languages; ideal languages; normative grammar and "correct" speech. (Also listed as Mass Communication 27.280 and Linguistics 29.280.)

Prerequisite: An introductory course in Philosophy or Second-year standing.

Day division: Lectures and discussion three hours a week.

*S. Talmage*

**Philosophy 32.284★**

**Society, Value and Technology**

An examination of some ethical problems raised by actual and conceivable advances in technology. In the light of the present and future supply of resources, the modern urban environment and communication systems, what sort of society should we strive for? Specific issues dealt with include genetic engineering, obligations to future generations, triage and fair distribution of the world's vital resources, privacy and social control and the ideas of progress and growth.

Prerequisite: An introductory credit in Philosophy or permission of the department.

Not offered 1986-87.

**Philosophy 32.290**

**Truth and Propaganda**

A study of techniques, ancient as well as modern, for influencing public opinion. The ethics of various attempts to control, affect or modify mass consciousness, under circumstances of wartime or peace, by the state, political parties, commercial interests or pressure groups, are discussed. Attention is paid to definition of key terms such as "propaganda," "manipulation" and the like, in the light of shifting nuances of different times and usages. The problem of arriving at a satisfactory definition of "truth" to compare or contrast with "propaganda" is one focal point of investigation. The values of an open society, as against those promoted by closed societies,

also receive attention, account being taken of subtler as well as more obvious forms of censorship, and of external as well as internal attempts to influence or subvert public consciousness in a given society. (Also listed as Mass Communication 27.290.)

Prerequisite: An introductory course in Philosophy or Second-year standing.

Day division: Lectures and discussion three hours a week.

*R. Marlin*

Philosophy 32.305

**German Philosophy: Eighteenth and Nineteenth Centuries**

An examination of some major German philosophers of the late eighteenth and nineteenth centuries, including Kant, Hegel, Schopenhauer, Marx and Nietzsche.

Prerequisite: An introductory course in Philosophy or Second-year standing.

Precludes additional credit for Philosophy 32.306★.

Day division: Lectures and seminars three hours a week.

*B.I. Eged*

Philosophy 32.306★

**Kant to Hegel**

The development of German idealism from Kant to Hegel.

Prerequisite: An introductory course in Philosophy or Second-year standing.

Precludes additional credit for Philosophy 32.305.

Day division, Fall term: Lectures and seminars three hours a week.

*B.I. Eged*

Philosophy 32.311★

**Philosophy of Law: The Nature of Law**

This course involves a consideration of the concept of law, and of those concepts that are commonly associated with it, viz. rules, obligations, authority, coercion, and force. (Also listed as Law 51.311★.)

Prerequisite: An introductory course in Philosophy or Second-year standing.

Day division, Fall term: Lectures and discussion three hours a week.

Philosophy 32.312★

**Philosophy of Law: The Logic of Law**

This course examines legal reasoning and analyzes concepts of particular significance to the law. These include justice, rights and duties, liability, punishment, ownership and possession. (Also listed as Law 51.312★.)

Prerequisite: An introductory course in Philosophy or Second-year standing.

Day division, Winter term: Lectures and discussion three hours a week.

*R. Marlin*

Philosophy 32.330

**Social and Political Philosophy**

An analysis of the concepts used to explain and justify social and political thinking or action: state, society, the common good, justice, rights and obligations, punishment and liberty, and a consideration of the moral basis of political obligation.

Prerequisite: An introductory course in Philosophy or Second-year standing.

Day division: Lectures and discussion two hours a week.

*B. Wand*

Philosophy 32.332★

**Issues in the Philosophy of Science**

An introduction to the main currents of post-positivist philosophy of science. The main concepts discussed in the course include: truth, meaning, testability, theory ladenness, progress, induction, objectivity, rationality, explanation and paradigms. An attempt is made to trace the use of these concepts and the various philosophical problems to which they give rise from early twentieth century positivism through the writings of Karl Popper and Thomas Kuhn to the writings of Paul Feyerabend, Imre Lakatos and Mary Hesse.

Prerequisite: An introductory course in Philosophy or Second-year standing.

Not offered 1986-87.

Philosophy 32.333★

**Science and the Structure of Society**

An introduction to the ideas of the Frankfurt School, of Hermeneutics, and of Structuralism. The views of Horkheimer, Habermas, Ricoeur, Althusser and Foucault on the value of scientific discourse and the nature of the critical study of society are examined in some detail.

Prerequisite: An introductory course in Philosophy or Second-year standing.

Not offered 1986-87.

Philosophy 32.335

**Logic**

An introduction to symbolic logic together with a discussion of some problems in the philosophy of logic.

Prerequisite: An introductory course in Philosophy or permission of the Department.

Day division: Lectures and discussion three hours a week.

*J. Leyden*

Philosophy 32.351★

**Philosophy of Computing**

Can machines think? The course begins with an overview of research results concerning "artificial intelligence," followed by a discussion of theoretical limits to computing. Further topics to be considered may include the information-processing view of the mind/brain problem, Searle's paradox and Weizenbaum on what ought not to be computed.

Prerequisite: One credit in Philosophy or Second-year standing in Computer Science.

Day division, Fall term.

*J.W. Leyden*

Philosophy 32.366★

**Philosophies of Love**

Philosophical theories of love are studied with emphasis on their implications for understanding human nature and developing moral ideals.

Recommended background: Philosophy 32.266.

Not offered 1986-87.

Philosophy 32.380

**Moore, Russell, Wittgenstein**

A brief account of the Idealism of Bradley sets the context for a study of the reactions of Moore and Russell. Their contributions to metaphysics, theory of knowledge and linguistic analysis are examined and compared with the early views of Wittgenstein. In the Winter term there is a concentrated study of the later work of Wittgenstein. The approach is both interpretive and problem-oriented.

Prerequisite: Two credits in Philosophy.

Not offered 1986-87.



Philosophy 32.399

**Independent Study**

Normally restricted to students with at least three credits in philosophy and with high standing in philosophy courses. The students submit topics for approval and present papers for grading.

Prerequisite: Permission of the Department.

Philosophy 32.404★

**Greek Philosophy**

An intensive study of selected texts.

Prerequisite: Final-year Honours standing in a Philosophy program or permission of the Department.

Day division, Fall term.

*D. Dubrule*

Philosophy 32.406★

**Descartes**

Prerequisite: Final-year Honours standing in a philosophy program or permission of the Department.

Not offered 1986-87.

Philosophy 32.407★

**Hume**

An intensive study of selected texts.

Prerequisite: Final-year Honours standing in a Philosophy program or permission of the Department.

Not offered 1986-87.

Philosophy 32.408★

**Kant**

An intensive study of selected texts.

Prerequisite: Final-year Honours standing in a Philosophy program or permission of the Department.

Not offered 1986-87.

Philosophy 32.409★

**Marx**

Prerequisite: Final-year Honours standing in a Philosophy program or permission of the Department.

Not offered 1986-87.

Philosophy 32.411★

**Action, Intention and Responsibility**

Prerequisite: Final-year Honours standing in a Philosophy program or permission of the Department.

Not offered 1986-87.

Philosophy 32.412★

**Wittgenstein**

Prerequisite: Final-year Honours standing in a Philosophy program or permission of the Department.

Not offered 1986-87.

Philosophy 32.416★

**Medieval Philosophy**

Prerequisite: Final-year Honours standing in a Philosophy program or permission of the Department.

Not offered 1986-87.

Philosophy 32.417★

**Hegel**

Prerequisite: Final-year Honours standing in a Philosophy program or permission of the Department.

Day division, Winter term.

*B. Egyed*

Philosophy 32.421★

**Epistemology**

Prerequisite: Final-year Honours standing in a Philosophy

program or permission of the Department.

Not offered 1986-87.

Philosophy 32.431★

**Philosophy of Logic**

Prerequisite: Final-year Honours standing in a Philosophy program or permission of the Department.

Not offered 1986-87.

Philosophy 32.441★

**Contemporary Moral or Political Philosophy**

An intensive study of recent works in one or both of these areas.

Prerequisite: Final-year Honours standing in a Philosophy program or permission of the Department.

Not offered 1986-87.

Philosophy 32.451★

**Philosophy and Theories of Mentality**

A study of some philosophical issues arising from psychology, biology, cognitive science and neuroscience.

Prerequisite: Final-year Honours standing in a Philosophy program or permission of the Department.

Day division, Winter term.

*S. Clarke*

Philosophy 32.461★

**Philosophy of Religion**

Prerequisite: Final-year Honours standing in a Philosophy program or permission of the Department.

Evening division, Fall term.

*J. Thompson*

Philosophy 32.481★

**Philosophy of Language**

Prerequisite: Final-year Honours standing in a Philosophy program or permission of the Department.

Not offered 1986-87.

Philosophy 32.490

**Tutorial**

Prerequisite: Permission of the Department.

Philosophy 32.491★

**Tutorial**

Prerequisite: Permission of the Department.

*Note:*

Students who wish to enroll in a tutorial course must consult the Honours Adviser, preferably *before* registration.

**Graduate Course Open to Undergraduate Students**

The following graduate course may, with permission, be taken by Honours and Combined Honours students in their final year.

*Philosophy*

32.545 Departmental Seminar

# Department of Political Science

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## Officers of Instruction

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### *Chairman*

Teresa Rakowska-Harmstone

### *Assistant Chairman*

Alain G. Gagnon

### *Supervisor of Graduate Studies*

Jane Jensen

### *Assistant Supervisor of Graduate Studies*

Scott E. Bennett

### *Supervisor of Honours Studies*

To be announced

### *Supervisor of Major Studies*

To be announced

### *Professor Emeritus*

Henry B. Mayo

### *Professors*

Douglas G. Anglin

Robert E. Bedeski

Bohdan R. Bociurkiw

Robert J. Jackson

Jane Jensen

Peyton V. Lyon

Kenneth D. McRae

Lynn K. Mytelka

Khayyam Z. Paltiel

Jon H. Pammett

Teresa Rakowska-Harmstone

Donald C. Rowat

Radoslav Selucky

John H. Sigler

V. Subramaniam

Brian W. Tomlin

Jill McCalla Vickers

Harald von Riekhoff

Michael S. Whittington

Conrad J. Winn

### *Associate Professors*

Jon Alexander

Nguyen H. Chi

Thomas Darby

Michael B. Dolan

Linda Freeman

Maureen A. Molot

Willard A. Mullins

George Roseme

Paul L. Rosen

Elliot L. Tepper

Glen S. Williams

### *Assistant Professors*

David J. Bellamy

Scott E. Bennett

Peter C. Emberley

Alain G. Gagnon

Charles F. Schuetz

Glen B. Toner

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## General Information

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Ottawa provides a wealth of resources, both in personnel and in research materials, for the student of government, politics, public administration and international relations. Undergraduates will be assisted in making the fullest use of these unique advantages of the national capital. The Department of Political Science offers courses in the following fields of study: Canadian government and politics, comparative institutions and politics, public administration and public policy, international relations, political theory and methodology.

Students should note that it is possible to combine a Major or Honours in Political Science with a pattern of studies, such as urban studies, studies in developing areas, etc. Those wishing to do so should consult the Department for a suggested outline of courses.

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## Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all departmental regulations and requirements as set out below.

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## Major Programs

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A Major in Political Science requires Political Science 47.100; one of 47.230 or 47.270; and four or more additional credits in the Department.

First-year students intending to enter a Major (or Honours) program in Political Science should note that they may take a 200-level course concurrently with Political Science 47.100.

A Combined Major, including Political Science, requires Political Science 47.100 and three or more additional credits.

Majors should take a number of courses in related social sciences. Final-year Majors with the required standing may, with permission, be admitted to 400-level Honours courses, provided space is available. The entire program must be approved by the Department.

Majors must maintain a C- average in Political Science.

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## Honours Programs

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The Honours programs may be entered in the First year, or by transfer from Major programs, if sufficient standing has been obtained. Only students whose past record indicates the ability to meet the Department's language requirement, and to obtain at least a B- in the Honours Essay will be recommended for Fourth-year Honours. An Honours student may be approved for a Major degree at the end of the Third year if the requirements under the Major program have been completed. The following programs are available.

### Honours in Political Science

For full Honours, 20 credits will be required, including at least nine credits in political science. The Political Science credits must comprise:



1. Political Science 47.100, 47.230, 47.270 and 47.498;
  2. One credit (or two half credits), chosen from: Political Science 47.200, 47.300★, 47.301★, 47.302★, 47.303★, 47.304★, 47.305★, 47.335★, 47.336★, 47.340, 47.366★, 47.400, 47.401, 47.402★, 47.403★, 47.404★, 47.406★, 47.407★, 47.408★, 47.409★, 47.411★
  3. One credit (or two half credits) chosen from: Political Science 47.215, 47.260, 47.310, 47.312, 47.314★, 47.315, 47.316★, 47.317★, 47.320, 47.321, 47.322, 47.332★, 47.345★, 47.360★, 47.361★, 47.365★, 47.366★, 47.405, 47.412★, 47.413★, 47.414★, 47.415★, 47.420★, 47.421★, 47.422★, 47.440★, 47.460, 47.461★, 47.466★, 47.467★, 47.482★, 47.483★;
  4. Three additional credits in Political Science, of which the equivalent of one credit must be a 400-level seminar.
  5. *Language requirement:* The Department requires Honours students to have a knowledge of French. This requirement may be satisfied in one of two ways:
    - (a) Successful completion of one of French 20.106★, 20.107, 20.108, or 20.109, or an equivalent course approved by the Department. Students with a limited background in French should note that it may be necessary for them to take French 20.100 or 20.102 in order to be admitted to the above-listed courses.
    - (b) The Department conducts language examinations twice each year (November and March). This examination must be successfully completed before registration in the final five credits of the Honours program. If the examination is attempted and failed, the student must then satisfy the language requirement by completing option (a) above.
- Students from abroad, whose mother tongue is other than English, or students whose research interests require another language, may obtain permission from the Supervisor of Honours Studies to substitute this language for French.
6. Candidates present a graduation essay on some topic involving independent investigation (Political Science 47.498); they may be examined orally on this essay and must receive at least B- in this course.
  7. Candidates must select a minor field or fields consisting of three credits in an approved area outside of Political Science.

### Combined Honours

Students intending to enter a program combining Political Science with another discipline should, in their First year, take Political Science 47.100 and the introductory course in the other discipline. For Combined Honours at least six credits in Political Science will be required, including:

1. Political Science 47.100, 47.230, 47.270 or its equivalent; a 400-level seminar; 47.498 unless the Honours Essay is written in the other discipline of the Combined program;
2. The equivalent of two credits, chosen from requirements 2 and/or 3 listed for the full Honours program. The two credits may be chosen from one list; one of the two credits may be the 400-level seminar;
3. The language requirement as stated for Honours (item 5 above) in Political Science must be completed;
4. The requirements as stated for Combined Honours in the other discipline of the Combined program must be met.

### Combined Honours, Journalism and Political Science

Students may select a course pattern that will lead either to the degree of B.A. with Combined Honours in Journalism and Political Science, in which case the Honours Essay will be written for the Department of Political Science, or to the degree of B.J. with Combined Honours in Political Science, in which case the Honours Essay will be written for the School of Journalism. Students in either program must complete 21 credits, and they must maintain a standing sufficiently high at all times to satisfy the standards of both the School of Journalism and the Department of Political Science. Please refer to the statements of standing on p. 180 (Journalism) and pp. 88-89 (Arts and Social Sciences).

Course requirements are:

1. A minimum of six credits in Political Science including: 47.100, 47.230, 47.270 or its equivalent, 47.498 if the student is in the B.A. program, the equivalent of two credits chosen from requirements 2 and/or 3 listed for Honours in Political Science, the equivalent of one credit from the 400-level seminars offered.
2. The Journalism courses normally required under the Honours Journalism program, including Journalism 28.100, 28.101★, 28.200, 28.220, 28.320, 28.351★, 28.421 and 28.498 if the student is in the B.J. program. Students should consult the School of Journalism on course patterns. Note: Journalism 28.320 is a two-credit course.
3. The language requirement as stated for Honours in Political Science (item 5 above) must be completed.
4. An approved course in Canadian history. (Students who wish to practise journalism in another country may be advised to choose a different history course.)

### Combined Honours in Political Science and Sociology

Students in this program are required to complete six credits in Political Science including Political Science 47.100, 47.230, a 400-level seminar and 47.498 (if the Honours Essay is written in Political Science). In addition, the student must complete one of the following methodology sequences:

- (a) in the Second year, Political Science 47.270; in the Third year, Sociology, 53.370; or
- (b) in the Second year, Sociology-Anthropology 56.200★ plus one of Sociology 53.201★ or Anthropology 54.201★; in the Third year, Political Science 47.471★ and 47.472★. Students should note that Political Science 47.471★ and 47.472★ may not be offered every year.

Students must also meet requirements 2, 3 and 4 as stated for Combined Honours in Political Science.

### Honours and Combined Honours Standing

Students must maintain a standing sufficiently high at all times to satisfy the requirements of the Faculties of Arts and Social Sciences as stated on pp. 88-89.

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### Graduate Program

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The Department of Political Science offers studies leading to the degree of Master of Arts and to the degree of Doctor of Philosophy. For further details consult the Graduate Studies and Research Calendar.

## Courses Offered

### Note:

The following is a complete list of all Political Science undergraduate courses. *Please note that all courses are not offered every year.* Students should consult the timetable published in early June for a list of courses that will be offered in 1986-87.

★ denotes a half-credit course.

### ■ First Year

Political Science 47.100

#### Introduction to Political Science

An introduction to four areas of concern in the study of contemporary political issues and problems: political thought, focusing upon the clash of modern ideologies such as fascism, socialism, liberalism, communism and nationalism; comparative government, starting from the Canadian system, and including one other western democracy, a communist system and a developing country; international politics; and methods of enquiry.

Day and Evening divisions: Lectures and discussion three hours a week.

### ■ Second Year: Majors and Honours

Political Science 47.200

#### Canadian Government and Politics

A survey of the political process and political institutions in Canada.

Prerequisite: Political Science 47.100 or permission of the Department. Third-year students in another discipline will normally be permitted to take this course without having taken Political Science 47.100.

Day and Evening divisions: Lectures and discussion three hours a week.

Political Science 47.215

#### Comparative Politics

An examination of concepts, theories and methods employed in the study of comparative politics, with particular emphasis on cross-national comparison of regimes and some of the major issues in the field.

Prerequisite: Political Science 47.100.

Day division: Lectures and discussion three hours a week.

Political Science 47.230

#### History of Political Thought

A study of western political thought from classical times to the nineteenth century. Plato, Aristotle, Machiavelli, Hobbes, Locke, Rousseau and other thinkers are considered.

Precludes additional credit for Political Science 47.231.

Prerequisite: Political Science 47.100 or permission of the Department. Third-year students in another discipline may normally take this course without having taken Political Science 47.100.

Day and Evening divisions: Lectures and discussion three hours a week.

Political Science 47.260

#### International Politics

An analysis of the structure and processes of the international system; the interactions of both state and non-state actors (such as multinational enterprises). Contemporary approaches (for example, simulations) to the systematic study of international phenomena are illus-

trated by reference to current developments such as nuclear proliferation and the tensions between rich and poor nations.

Prerequisite: Political Science 47.100 or permission of the Department.

Day and Evening divisions: Lectures and discussion three hours a week.

Political Science 47.270

#### Quantitative Political Science Research Methods

An introduction to quantitative research methods used in political science. The course has four basic components.

These are the logic and nature of the quantitative study of politics, research design, data collection methods, and statistical techniques for data analysis. In addition, students have an opportunity to use packaged computer programs in analysing political and policy-related data.

Prerequisite: Political Science 47.100.

Lectures and discussion three hours a week.

### ■ Third Year: Majors and Honours

Political Science 47.300★

#### Canadian Provincial Politics

A comparative examination of the nature of Canadian provincial politics. Topics include: political culture, history, party systems, electoral systems and voting behaviour.

Prerequisite: Political Science 47.200 or permission of the Department.

Lectures and discussion three hours a week.

Political Science 47.301★

#### Canadian Provincial Government and Intergovernmental Relations

A comparative examination of the institutions of provincial governments, with concentration on the executive and legislature. In addition, attention is focused on the structures and processes of intergovernmental relations, including federal-provincial conferences, selected issues and provincial-municipal relations.

Prerequisite: Political Science 47.200 or permission of the Department. Political Science 47.300★ is recommended.

Lectures and discussion three hours a week.

Political Science 47.302★

#### Canadian Municipal Government

An examination of the nature and problems of Canadian municipal government, including metropolitan and regional government and provincial-municipal relations.

Prerequisites: Political Science 47.100 and preferably also 47.200, or completion of Second year in another discipline.

Lectures and discussion three hours a week.

Political Science 47.303★

#### Canadian Urban Politics

An examination of the nature and problems of Canadian urban politics.

Prerequisite: Political Science 47.302★ or permission of the Department.

Lectures and discussion three hours a week.

Political Science 47.304★

#### Political Parties and Elections in Canada

An examination of the evolution of the party system, the growth of major and minor party movements and the electoral process in Canada.



**Prerequisite:** Political Science 47.200 or a previous course in the political process.  
Lectures and discussion three hours a week.

**Political Science 47.305★**

**Ontario Government and Politics**

A survey of the political process and political institutions in Ontario.

**Prerequisite:** Political Science 47.200 or permission of the Department.

Lectures and discussion three hours a week.

**Political Science 47.310**

**Government and Politics in Africa**

The evolution and functioning of African political systems, with emphasis on recent developments in West Central and East Africa.

**Prerequisite:** Political Science 47.100.

Lectures and discussion three hours a week.

**Political Science 47.312**

**Government and Politics of East Asia**

The evolution and functioning of the political systems of China, Japan and Korea.

**Prerequisites:** Political Science 47.100 and preferably 47.215.

Lectures and discussion three hours a week.

**Political Science 47.313★**

**Women in Politics: A Comparative Perspective**

An examination of the participation of women in politics, especially in developed democracies. Special emphasis is placed on the structural and cultural impediments to full participation in the Canadian context, using primary data.

**Prerequisites:** Political Science 47.100 and one of 47.200, 47.215 or 47.270.

Lectures and discussion three hours a week.

**Political Science 47.314★**

**Eastern European Politics**

A comparative examination of political institutions and processes in the Communist states of Eastern Europe.

**Prerequisite:** Political Science 47.100 and preferably 47.215.

Lectures and discussion three hours a week.

**Political Science 47.315**

**Government and Politics of South and South-East Asia**

This course on developing areas acquaints the student with the patterns of colonial history, emergent political regimes and problems of development and foreign policy in the countries from Pakistan through the Philippine Islands, with special emphasis on problems of political change.

**Prerequisite:** Political Science 47.100 and preferably 47.215.

Lectures and discussion three hours a week.

**Political Science 47.316★**

**Revolution**

An examination of theories of revolution from Aristotle through the present era. Students are encouraged to examine revolution as a concept, and as an empirical fact of central importance to our age.

**Prerequisite:** Political Science 47.215 or permission of the Department.

Lectures and discussion three hours a week.

**Political Science 47.317★**

**The Causes of War**

A detailed examination of alternate theories of the causes of war. The course examines such alternate perspectives as biological, social and comparative historical approaches, and includes the results of peace research activities of the past two decades.

**Prerequisite:** Political Science 47.215 or permission of the Department.

Lectures and discussion three hours a week.

**Political Science 47.318★**

**Women in Developing Politics: A Comparative Assessment**

This course examines the status and role of women in developing countries and in socialist countries mobilized for social change, including case studies drawn from Africa, Asia and Latin America. It includes an examination of aspects of development theories from a feminist perspective.

**Prerequisite:** Political Science 47.215 or permission of the Department.

Lectures and discussion three hours a week.

**Political Science 47.320**

**Soviet Government and Politics**

A study of the environment and political culture of the Soviet political system; political socialization, communication and elite recruitment; the structure and functioning of the Communist Party and governmental institutions; policy making and implementation, capabilities of the Soviet political system.

**Prerequisites:** Political Science 47.100 and preferably 47.215, or History 24.260.

Lectures and discussion three hours a week.

**Political Science 47.321**

**Government and Politics of Western Europe**

A survey of the political processes and institutions in the democracies of Western Europe, with emphasis on Britain, France, Italy and the German Federal Republic.

Lectures and discussion three hours a week.

**Political Science 47.322**

**Government and Politics of the United States**

American political thought, constitutional development, and the governmental process.

**Prerequisites:** Political Science 47.100 and preferably 47.215.

Lectures and discussion three hours a week.

**Political Science 47.330★**

**Politics and Literature**

A study of imaginative prose in which political ideas and/or political settings dominate. Literature as political communication, the impact of literature upon politics, the peculiar value of literature in the study of politics, its shortcomings.

**Prerequisites:** Political Science 47.100 and permission of the Department.

Lectures and discussion three hours a week.

**Political Science 47.331★**

**Politics and Psychoanalytic Thought**

An investigation and critique of the contribution of psychoanalytic thought to political and social theory. Emphasis is placed on the origin and function of culture, instinct modification, perversion, character and political order; the psychoanalytic ethic and the therapeutic state; the Freudian-Marxist dialectic and the critique of society.

Prerequisite: Political Science 47.230 or Psychology 49.261 or permission of the Department.  
Lectures and discussion three hours a week.

Political Science 47.332★

**East Asian Political Thought — China, Japan and Korea**

A seminar on Chinese political philosophy with special reference to historical and modern thought on the State. Japanese and Korean variants of the Chinese state are also discussed.

Prerequisite: Political Science 47.100 or permission of the Department.

Lectures and discussion three hours a week.

Political Science 47.333

**Modern Political Thought and Ideologies**

An analysis of leading political concepts and ideologies since 1800, including utilitarianism, liberalism, conservatism, socialism and fascism.

Lectures and discussion three hours a week.

Political Science 47.334

**Ancient and Medieval Political Thought**

An inquiry into the significance for political theory of the ancient and medieval controversies over nature/convention, power/knowledge, time/eternity, theory/practice, and science/mysticism. Such thinkers as Homer, the pre-Socratics, Plato and Aristotle, the neo-Platonists, Augustine, and the Scholastics are considered.

Prerequisite: Political Science 47.230 or Philosophy 32.225 or Law 51.315 or permission of the Department.

Lectures and discussion three hours a week.

Political Science 47.335★

**Canadian Political Ideas**

An examination of the sources and development of political ideas in French and English Canada.

Prerequisite: Political Science 47.200 or 47.230 (preferably both) or permission of the Department.

Lectures and discussion three hours a week.

Political Science 47.336★

**Canadian Political Culture**

An analysis of the elements of Canadian political culture. Topics include individual beliefs, attitudes and values, the influence of the economy and environment, ideology, political socialization, and regional differences.

Prerequisite: Political Science 47.200 or permission of the Department.

Lectures and discussion three hours a week.

Political Science 47.340

**Canadian Public Administration**

A survey of the political and social impact of the federal public service in Canada, including the nature of bureaucracy, its role in policy making, and social and political control of the public service in Canada.

Prerequisite: Political Science 47.200 or permission of the Department.

Lectures and discussion three hours a week.

Political Science 47.345★

**Contemporary Public Policy Analysis**

An examination of the factors that have led to the expansion of state activities in Canada and other liberal democracies, and a survey of the context and process of policy formation in such fields as social welfare, regional integration, foreign investment and trade, and the regulation of labour and capital.

Prerequisite: Political Science 47.100 or permission of

the Department.

Lectures and discussion three hours a week.

Political Science 47.360★

**International Institutions**

Origins, structure and functioning of international institutions with emphasis on the United Nations as well as regional organizations. Topics include peace and security, international aid and development, human rights and the control of global resources.

Prerequisite: Political Science 47.260 or permission of the Department.

Lectures and discussion three hours a week.

Political Science 47.361★

**Theories of International Politics**

A survey of theoretical approaches to the study of international politics including an examination of the major concepts used for analysis and explanation in the field.

Prerequisite: Political Science 47.260 or permission of the Department.

Lectures and discussion three hours a week.

Political Science 47.365★

**Comparative Study of Foreign Policy**

An examination of the utility of comparative analysis in the study of the objectives, strategies and decision-making processes involved in the foreign policies of states.

Prerequisite: Political Science 47.260 or permission of the Department.

Lectures and discussion three hours a week.

Political Science 47.366★

**Canadian Foreign Policy**

An examination of the traditions, domestic influences, objectives, capabilities, and decision-making processes, and analysis of selected contemporary issues.

Prerequisite: Political Science 47.260 or permission of the Department.

Lectures and discussion three hours a week.

■ **Fourth Year: Honours and Graduate**

These courses are normally reserved for Honours students in their final year.

Political Science 47.400

**Topics in Canadian Government and Politics**

Section A: Political Economy of Canada. An examination of selected issues in Canadian political economy including the role of the state in the Canadian economy, the political aspects of foreign ownership and economic structure and political change.

Section B: Canadian Political Institutions. A seminar on selected topics on institutions of Canadian Government at the federal level.

Section C: Canadian Political Behaviour. A seminar on voting, public opinion, political violence, socialization and other aspects of political behaviour in Canada. The course also examines religion, class and region as determinants of political cleavage.

Prerequisite: Political Science 47.200.

Seminars three hours a week.

Political Science 47.401

**Canadian Public Policy**

A seminar that critically examines relevant policy patterns, structures and processes from a number of theoretical perspectives, in relation to the Canadian political econ-



omy and to selected areas of contemporary Canadian public policy (such as energy, social welfare, foreign investment, public expenditure and regulation).

Prerequisites: Political Science 47.200 and 47.340 or permission of the Department.

Seminar three hours a week.

#### Political Science 47.402★

##### **Policy Seminar: Problems of Northern Development**

A research seminar that examines the issues, the policy processes and the problems of policy implementation in the political and economic development of Canada's northern territories.

Prerequisites: Political Science 47.200 and 47.340 or permission of the Department.

Seminar three hours a week.

#### Political Science 47.403★

##### **Politics and the Media**

A seminar on the role of the mass media in the Canadian political system.

Prerequisite: Political Science 47.200 or permission of the Department.

Seminar three hours a week.

#### Political Science 47.404★

##### **Interest Groups in Canadian Politics**

A seminar on the role of organized groups in the political process, with special reference to Canada.

Prerequisite: Political Science 47.200 or permission of the Department.

Seminar three hours a week.

#### Political Science 47.405

##### **Federalism**

A seminar on the theory and practice of divided political authority. The primary focus is the Canadian federal structure and its current crisis. Using a theme-oriented approach, the methodology is comparative, with relevant aspects drawn from the experience of other federations and quasi-federations as well as a study of the sovereignty-association model.

Prerequisite: Political Science 47.200 or permission of the Department.

Seminar three hours a week.

#### Political Science 47.406★

##### **Legislative Process in Canada**

A seminar on the role of Parliament and of the individual M.P. in terms of policy making, representation and the passage of legislation.

Prerequisite: Political Science 47.200 or permission of the Department.

Seminar three hours a week.

#### Political Science 47.407★

##### **The Politics of Law Enforcement in Canada**

A research seminar focusing on major issues in the area of law enforcement policy, police administration and the criminal justice system in Canada. Particular emphasis is given to the role of law-enforcement agencies as integral institutions of the Canadian political system.

Prerequisite: Political Science 47.200 or permission of the Department. Prerequisite may be waived for students with practical experience in law enforcement.

Seminar three hours a week.

#### Political Science 47.408★

##### **National Security and Intelligence in the Modern State**

A research seminar dealing with the state's response to foreign espionage, alleged subversion, terrorism, and

counterintelligence in general but with specific reference to the dilemmas of national security operations in liberal societies. Major focus is on the Canadian experience, but with extensive use of materials chronicling the practices of KGB, CIA, BIS, ASIO, MOSSAD, etc.

Prerequisite: Political Science 47.200 or 47.260 or permission of the Department.

Seminar three hours a week.

#### Political Science 47.409★

##### **Politics in Quebec**

An examination of society, culture, economy and politics in Quebec, giving special attention to the politically relevant changes since 1960 and the central place of Quebec within the Canadian federation.

Prerequisites: Political Science 47.200 and a reading knowledge of French.

Seminar three hours a week.

#### Political Science 47.410★

##### **Canadian and Comparative Local Government and Politics**

The seminar begins with a comparative survey of the systems of local government in Canada, Britain and the United States, and in the remainder of the course the emphasis on Canadian or comparative, and the problems chosen for study, varies with the interests of the students.

Prerequisites: Political Science 47.200 and 47.302★ or 47.303★ or permission of the Department.

Seminar three hours a week.

#### Political Science 47.411★

##### **French-English Relations**

A seminar on French-English relations in federal politics and in selected provinces, with emphasis on areas of conflict and methods of conflict management.

Prerequisites: Political Science 47.200 or an approved course in Canadian history or permission of the Department. A reading knowledge of French is recommended.

Seminar three hours a week.

#### Political Science 47.412★

##### **Society and Politics in Liberal Democracies**

A seminar that examines the social structure and politics of advanced capitalist societies, including the historical and contemporary relationship between social classes — groupings, political parties and interest groups.

Prerequisite: Political Science 47.200 or 47.215 or permission of the Department.

Seminar three hours a week.

#### Political Science 47.413★

##### **The State in Advanced Capitalist Societies**

A seminar that undertakes comparative analysis of the structure and role of the state in capitalist societies. Specific topics may include state economic intervention, corporatism, welfare state activities and neo-conservatism.

Prerequisite: Political Science 47.200 or 47.215 or permission of the Department.

Seminar three hours a week.

#### Political Science 47.414★

##### **Theory and Practice in Third-World Development**

An examination of the various theoretical approaches to the analysis of development and underdevelopment, of the historical experience of important models of development and of their application to selected countries in Asia, Africa and Latin America.

Prerequisite: Political Science 47.215, 47.260, 47.310,

47.312 or 47.315 or permission of the Department.  
Seminar three hours a week.

Political Science 47.415★

**Selected Problems in Third-World Development**

A research seminar focusing on the nature of international factors that influence Third World development such as multinational corporations, the new international division of labour, the new protectionism, the role of international debt, the politics of the Green Revolution, technology, and development assistance.

Prerequisite: Political Science 47.215, 47.260, 47.310, 47.312, or 47.315 or permission of the Department.

Seminar three hours a week.

Political Science 47.420★

**Policy Making in the United States**

A seminar on conflict and co-operation in the United States legislative and executive/bureaucratic arenas; this course also treats overlapping struggles over policy initiative, innovation and planning. Special emphases are determined by student needs and interests.

Prerequisites: Political Science 47.100 and 47.322 or permission of the Department.

Seminar three hours a week.

Political Science 47.421★

**Politics of Influence in the United States**

A seminar on parties, interest groups, coalitions, movement and other significant influences upon who gets what, when, how in the United States. Other topics include elections, democratic accountability and political uses of mass media. Special emphases are determined by student needs and interests.

Prerequisites: Political Science 47.100 and 47.322 or permission of the Department.

Seminar three hours a week.

Political Science 47.422★

**Constitutional Politics**

A seminar on the political character of leading western constitutions, with special emphasis on judicial politics and judicial policy-making in the United States; consideration is also given to developments in Canada, Britain and France.

Prerequisites: Political Science 47.100 and 47.322 or permission of the Department.

Seminar three hours a week.

Political Science 47.430★

**Concepts of the State**

A critical survey of concepts of the state from Hegel to the present with emphasis on the dichotomy between the political and civil society, as well as on an analysis of class nature and regulatory role of the state in modern societies.

Prerequisite: Political Science 47.230 or 47.333 or permission of the Department.

Seminar three hours a week.

Political Science 47.431★

**Marxist Thought**

An examination of Marxism with special emphasis on Marx and Engels, and including writings from all periods of their work.

Prerequisite: Political Science 47.230 or 47.333 or permission of the Department.

Seminar three hours a week.

Political Science 47.432★

**Contemporary Marxism**

An examination of all relevant interpretations of Marx's theory including evolutionary socialism, Leninism, Trotskyism, Stalinism, Maoism and the main schools of contemporary revisionism.

Prerequisite: Political Science 47.431★.

Seminar three hours a week.

Political Science 47.435

**Contemporary Political Theory**

Recent work in political theory, stressing major approaches to the understanding of contemporary political life. This seminar includes approaches such as historicism, the sociology of knowledge, positivism, phenomenology, critical theory, existentialism, neo-classicism. Works by such thinkers as Gramsci, Mannheim, Popper, Strauss, Cassirer, Habermas, Sartre, and Voegelin are discussed.

Prerequisite: Political Science 47.230 or permission of the Department.

Seminar three hours a week.

Political Science 47.440★

**Comparative Public Administration**

A comparative study of the historical evolution of administration in Western Europe under absolute monarchy; the interaction of democracy and bureaucracy in Europe and North America; the transplanting of British and French bureaucratic institutions in colonial regimes and elsewhere; and the significance of bureaucracy in developed and developing societies.

Prerequisite: Political Science 47.215 or 47.340 or permission of the Department.

Seminar three hours a week.

Political Science 47.446★

**Theories of Public Administration**

A seminar on the theories of bureaucracy, organization and comparison.

Prerequisite: Political Science 47.340 or permission of the Department.

Seminar three hours a week.

Political Science 47.447★

**Decision Theories and Policy Studies**

This course covers decision making and policy studies in a non-mathematical way from three complementary angles: basic philosophy, psychology and theory of individual and group decision making, and overall policy analysis as pursued by Vickers, Dror and others, with a brief look at tools of decision making.

Prerequisite: Political Science 47.340 or permission of the Department.

Seminar three hours a week.

Political Science 47.448

**Public Organizations: Theory and Practice**

An examination of the major schools of organizational theory and behaviour as approaches for understanding the nature of public organizations. In the Winter term students prepare research papers on particular public agencies.

Prerequisite: Political Science 47.340.

Seminar three hours a week.

Political Science 47.460

**Analysis of International Politics**

Some principal issues in international relations; theory building, evaluation of concepts, research design, philosophy of science criteria and policy relevance in



ongoing research in international relations theory.  
Prerequisite: Political Science 47.260 or permission of the Department.  
Seminar three hours a week.

**Political Science 47.461★**

**Soviet Foreign Policy**

An examination of the foreign policy of the Soviet Union, with special emphasis on trends since World War II and on the period of détente.

Prerequisites: Political Science 47.260 and 47.320 or permission of the Department.  
Seminar three hours a week.

**Political Science 47.466★**

**American Foreign Policy**

A seminar on sources, trends and conflicting interpretations of the international roles of the United States since World War II. Foreign policy machinery and processes are assessed in terms of the relative importance of perceptions, ideology, self-interest, and domestic and foreign pressures. Special emphases are determined by the needs and interests of students.

Prerequisite: Political Science 47.260.  
Seminar three hours a week.

**Political Science 47.467★**

**International Politics of North America**

An examination of relations among states in North America and with other sectors in the international system. Emphasis is placed on Canada-United States relations, with subsidiary attention to Mexico. The theme of the seminar varies from year to year.

Prerequisite: Political Science 47.260 or permission of the Department.  
Seminar three hours a week.

**Political Science 47.471★ (part 47.470)**

**Intermediate Polimetrics for Micro Data**

This course introduces students to research designs and statistical techniques primarily used in analyzing survey data. Selected topics may vary from year to year. Students doing Honours papers based on micro data are advised to take this course.

Prerequisite: Political Science 47.270.  
Seminar three hours a week.

**Political Science 47.472★ (part 47.470)**

**Intermediate Polimetrics for Macro Data**

This course introduces students to research designs and statistical techniques primarily used in analyzing macro or aggregate data. Selected topics may vary from year to year. Students doing Honours papers based on macro data are advised to take this course.

Prerequisite: Political Science 47.270.  
Seminar three hours a week.

**Political Science 47.482★**

**International Politics of Africa**

The interactions of African states within the African subsystem and with other sectors in the international system. Each year the seminar focuses on a particular theme.

Prerequisite: Political Science 47.260 or 47.310 or permission of the Department.  
Seminar three hours a week.

**Political Science 47.483★**

**Foreign Policies of Major East Asian Powers**

The foreign policies of the East Asian powers, with special attention to China and Japan; an analysis of the

domestic sources of policy, capabilities, interests, decision-making processes and foreign relations.

Prerequisite: Political Science 47.260 or 47.312 or permission of the Department.  
Seminar three hours a week.

**Political Science 47.490**

**Tutorial in a Selected Field**

Tutorials or reading courses on selected topics may be arranged with the permission of the Department and agreement of the instructor.

Day division: Tutorial hours arranged.

**Political Science 47.491★**

**Tutorial in a Selected Field**

Tutorials or reading courses on selected topics may be arranged with the permission of the Department and agreement of the instructor.

Day division, Fall term: Tutorial hours arranged.

**Political Science 47.492★**

**Tutorial in a Selected Field**

Tutorials or reading courses on selected topics may be arranged with the permission of the Department and agreement of the instructor.

Day division, Winter term: Tutorial hours arranged.

**Political Science 47.498**

**Honours Graduation Essay**

During their Fourth year, Honours candidates in Political Science are required to present a major research essay. The Honours essay is carried out under the direction of a faculty supervisor who is either selected by the candidate or assigned early in the year. The Honours essay is evaluated by both the supervisor and an appointed reader.

Prerequisite: Final-year Honours standing in Political Science.\*

Day division: Tutorial hours arranged.

\*Students should refer to regulations of the Faculty of Social Sciences regarding submission of Honours Essays (see p. 89) and to the Department of Political Science course requirements for the Honours Essay, which may be obtained from the Departmental Office.

■ **Graduate Courses**

Fourth-year Honours students may, with permission of the Department, be admitted to the following 500-level Political Science seminars, which are more fully described in the Graduate Studies and Research Calendar:

*Political Science*

47.501★ Canadian Provincial Government and Politics

47.503★ Political Parties in Canada

47.504★ Policy-Making in Canada

47.505 Comparative Government

47.506★ Problems of Canadian Government I

47.507★ Problems of Canadian Government II

47.508★ The Politics of Energy and the Environment

47.509★ Canadian Political Economy

47.510 The Political Process in Canada

47.511★ Canadian Federalism

47.514★ Comparative Communist Politics, Theory and Practice

47.515★ Comparative Communist Politics, Selected Aspects

47.516★ Selected Problems in Soviet Politics

47.517★ Selected Problems in African Politics

47.518★ State, Revolution, and Reform in East Asia

47.520★ Nationalism

- 47.521★ Politics in Plural Societies
- 47.525★ Problems in American Government I
- 47.526★ Problems in American Government II
- 47.530 Political Theory
- 47.531★ Modern Political Culture and Ideology
- 47.532★ Democratic Theories
- 47.533★ Inquiries in Political Philosophy
- 47.534★ Analytical Political Theory
- 47.535 The Canadian and American Political Traditions
- 47.541★ Canadian Public Administration and Policy Analysis
- 47.544★ Public Administration in Developed Western Countries
- 47.545★ Public Administration in Developing Countries
- 47.548★ Research Seminar in Public Administration I
- 47.549★ Research Seminar in Public Administration II
- 47.550 Problems in Western European Politics
- 47.551★ Selected Problems in Political Economy I
- 47.552★ Selected Problems in Political Economy II
- 47.555★ Selected Problems of Comparative Politics I
- 47.556★ Selected Problems of Comparative Politics II
- 47.560 Theory and Research in International Politics
- 47.561★ Analysis of Canadian Foreign Policy
- 47.571★ Research Design
- 47.572★ Applied Research Methods
- 47.573★ Advanced Research Methods
- 47.581★ Foreign Policies of African States
- 47.585★ Foreign Policy Analysis
- 47.586★ Strategy
- 47.587★ Analysis of International Organization
- 47.588★ International Political Economy
- 47.589★ Problems in International Politics

#### **Related Courses**

Subject to *prior* approval by the Department, a student in the Honours or Major program may use one course in a related discipline as a Political Science credit. This permission will be granted only if the content of the transfer course is very closely related to Political Science and if the Department of Political Science does not itself offer a comparable course. Students in the Combined Major or Honours programs may not use related courses as Political Science credits.

#### **Courses Planned for Summer School and Evening Division**

A selection of courses will normally be offered in both Day and Evening divisions in the Summer. In the Fall/Winter session Political Science 47.100, 47.200, 47.230, 47.260, and 47.270 will normally be offered in both Day and Evening divisions. In addition, a number of 300- and 400-level courses will be scheduled in the Evening division each year. Specific course offerings will depend on faculty availability and student interest and demand.



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## Officers of Instruction

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### Chairman

W.D. Jones

### Chairman, Graduate Committee

D.C. McIntyre

### Chairman, Undergraduate Committee

J.F. Campbell

### Professors

D.A. Andrews

H. Anisman

H.B. Ferguson

P.A. Fried

W.D. Jones

J.B. Kelly

R.M. Knights

M.E. Marshall

D.C. McIntyre

B.A. Pappas

W.M. Petrusic

T.J. Ryan

N. Spanos

L.H. Strickland

J. Tombaugh

T.N. Tombaugh

W.G. Webster

D.W. Zimmerman

### Associate Professors

D.K. Bernhardt

E.J. Burwell

J.F. Campbell

F. Cherry

R.F. Dillon

R.F. Hoffmann

R.D. Hoge

B. Little

A. Moffitt

J. Partington

D.C.S. Roberts

B.W. Tansley

W. Thorngate

W.E. Walther

R.B. Wells

### Assistant Professors

M. Gick

S. Painter

L. Paquet

R. Zacharko

### Lecturer

T. Daniels-Beirness

### Adjunct Professors

A. Blouin, *Civic Hospital*

J. Bonta, *Ottawa-Carleton Detention Centre*

D.C. Buchanan, *Royal Ottawa Regional Rehabilitation Centre*

C. Bullard-Bates, *Royal Ottawa Regional Rehabilitation Centre*

P. Firestone, *University of Ottawa*

R. Flewelling, *Ottawa Board of Education*

J. Goodman, *Children's Hospital of Eastern Ontario*

K. Hrachuk, *Royal Ottawa Hospital*

A.B. Laver, *Carleton University*

P. McGrath, *Children's Hospital of Eastern Ontario*

D.M. Nozick, *Ottawa Civic Hospital*

P.G. Patel, *University of Ottawa*

D.L. Tate, *Royal Ottawa Hospital*

R. Trites, *Royal Ottawa Hospital*

F.R. Wake, *Carleton University*

T. Whalen, *Department of Communications*

S.J. Wormith, *Ministry of Solicitor General*

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## General Information

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### Programs Offered

The Department of Psychology offers three different undergraduate programs, two in the Faculty of Social Sciences and one in the Faculty of Science. The programs in the Faculty of Social Sciences are the Major B.A. program in Psychology (a minimum of 15 credits after Senior Matriculation) and the Honours B.A. program in Psychology (a minimum of 20 credits after Senior Matriculation). In the Faculty of Science, the Department offers an Honours program in Psychology leading to the Honours B.Sc.

The Honours programs are designed for students intending to do graduate work in psychology. It has been found that students who do not have at least a *B* average have little chance of being admitted to graduate schools in psychology and have difficulty completing the Honours thesis.

For any degree in Psychology, it is recommended that the equivalent of Grade 13 Mathematics and English be included in the student's high school program, and that prospective Psychology students also include Mathematics 69.107★ and 69.117★ in their university program. These courses should be taken during First year or as soon thereafter as is feasible.

### Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all departmental regulations and requirements as set out below.

### Course Requirements in Psychology

Psychology 49.100 is required of all students wishing to take further courses in the Department. The following are basic "core" courses: Psychology 49.200, 49.210★, 49.220★, 49.230★, 49.250★, 49.260★ and 49.270★. In most cases there are more specialized "branching" courses following upon these basic courses and these are indicated with 300- and 400-level designations.

Students in either the Major or Honours B.A. programs in Psychology may, if they wish, offer Computer Science 95.101★ (p. 66) as one of their optional half credits in psychology (but not to replace any of the specified psychology courses). Students wishing to take advantage of this option should notify the Psychology Undergraduate Office before the last date for course changes in the term of registration.

### Non-Psychology Options

All Psychology students, including those in Combined Major or Honours programs and those in the Criminology and Criminal Justice concentration, must offer a minimum of one credit (or two half credits) in each of two departments or interdisciplinary areas outside the Faculty of Social Sciences. The Faculty of Social Sciences includes the Departments of Economics, Geography, Law, Political

Science, Psychology, and Sociology and Anthropology and the Schools of Business and Public Administration.

All courses from outside the Faculties of Arts, Science and Social Sciences to be offered for credit towards graduation in Psychology degree programs must meet with departmental approval prior to the time of registration. In the credits counted towards the degree, no student may offer more than seven credits below the 200 level (including Psychology 49.100) in the Major program or in the B.Sc. Honours program, no more than nine such courses in the B.A. Honours program.

Optional courses recommended for students with specific interests can be found in *The Psychology Undergraduate Student Guide* available from the Psychology Undergraduate Office, B550 Loeb Building.

### Grade-Point Average

The Department of Psychology normally calculates grade-point averages on the basis of all Psychology courses taken at Carleton in which standing is offered for the purposes of graduation. The department does not accept the transfer of letter grades from other universities, excepting courses taken under the terms of the University of Ottawa Exchange Agreement (see p. 85).

### Part-Time Studies

While students may enrol as part-time students in the B.A. programs in the Department of Psychology, they should be aware of the impossibility of completing the required Honours courses in the Evening and Summer division.

### Psychology Undergraduate Student Guide

The Department publishes an annual guide to the Department and its program. In addition to summaries of requirements and deadlines, this guide describes specific course requirements (essays, examinations, etc.) and offers advice on options, special-topic courses, theses and preparation for graduate work. It can be obtained by contacting the Psychology Undergraduate Office, B550 Loeb Building.

### Course Numbering

The three digits following the departmental number, 49, indicate the course level, area, and specific content respectively. Numbers in parentheses indicate old numbers for a course. Students must ensure that they do not repeat a course that has been re-numbered, or one for which they received transfer credit on admission, because credit cannot be given twice for the same course.

The following list gives old numbers and the corresponding new numbers for courses otherwise unchanged:

Old	New	Title
49.211★	49.311★	Social Problems
49.221★	49.321★	Comparative Psychology
49.222★	49.322★	Sensory Psychology
49.251★	49.351★	Psychology of Early Childhood
49.252★	49.352★	Psychology of Middle Childhood
49.253★	49.353★	Psychology of Adolescence
49.255★	49.355★	Exceptional Children
49.258★	49.354★	Psychology of Adulthood and Old Age
49.261★	49.361★	Psychoanalytic Theories
49.262★	49.362★	Self Theories
49.264★	49.364★	Abnormal Behaviour
49.272★	49.347★	Behaviour Modification

49.300★	49.230★	Origins of Modern Psychology
49.301★	49.431★	Precursors of Psychology
49.302★	49.331★	Patterns of Twentieth-Century Psychology
49.303★	49.432★	Observation, Description and Explanation in Psychology
49.305	49.300	Design and Analysis in Psychological Research
49.321★	49.372★	Perception
49.327★	49.324★	Drugs and Behaviour
49.328★	49.325★	Psychopharmacology and Behavioural Medicine
49.347★	49.345★	Psychology of Motivation and Emotion
49.348★	49.346★	Psychology of Health and Illness
49.361★	49.363★	Psychology of Women
49.362★	49.365★	Transpersonal Psychology
49.380★	49.401★	Special Topics in Psychology
49.382★	49.402★	Special Topics in Psychology
49.384★	49.403★	Special Topics in Psychology
49.386★	49.323★	Field Course in Animal Behaviour

The following list gives old numbers and the corresponding new numbers of courses that have been altered in organization or substance. These courses *cannot* be repeated for credit:

Old	New	Title
49.200★	49.200	Introduction to Psychological Research and Statistics
49.205★		
49.315★	49.310	Social Psychology (Honours Seminar)
49.316★		
49.325	49.320	Behavioural Neuroscience (Honours Seminar)
49.345★	49.340	Community Psychology and Program Evaluation (Honours Seminar)
49.346★		
49.355★	49.350	Developmental Psychology (Honours Seminar)
49.356★		
49.365★	49.360	Personality (Honours Seminar)
49.376★	49.370	Cognition (Honours Seminar)
49.375★	49.375★	Animal Learning
49.330★	49.380	Human Assessment (Honours Seminar)
49.304		

### Major Program

This alternative is intended for the student who is not planning a career as a psychologist, but who wishes a liberal arts education with several courses in psychology.

The requirement for a Major in Psychology is six credits in Psychology and the maximum allowable is seven Psychology credits; that is, all students must offer at least eight non-Psychology option credits in their total of 15 required for the degree.

Students who decide to train for careers as psychologists are advised to transfer to the Honours program not later than the end of the Second year. Students who are considering this possibility should choose courses that are required for Honours Psychology students in the Second year.

The departmental requirements for a Major in Psychology are:

1. Psychology 49.100;
2. Psychology 49.200;
3. four of Psychology 49.210★, 49.220★, 49.230★, 49.250★, 49.260★ and 49.270★, with the constraints that



- (a) at least one Natural Science core course must be offered (Psychology 49.220★, or 49.270★); and  
 (b) at least one Social Science core course must be offered (Psychology 49.210★, 49.250★, or 49.260★);

4. two additional credits in psychology;

5. at least one credit or two half credits in each of two departments or interdisciplinary areas outside of the Faculty of Social Sciences;

6. a minimum cumulative grade-point average of C- (4.0) in Psychology courses taken at Carleton. All Psychology courses successfully completed at Carleton will be included in this average.

#### Notes:

1. Students who transfer into the Fourth year of the Honours program who do not have credits in statistics and experimental psychology will not be able to complete the requirements for the degree in one year.

2. Honours students who are considering reverting to the Major program should not include more than seven psychology credits in the first three years.

### Combined Major

The departmental requirements for a Major program combining Psychology with another discipline are the same as for a Major, with the exception that, under 4 above, only one additional credit in Psychology is required, for a minimum offering of five credits in Psychology. The maximum remains at seven credits. Note that requirements 5 and 6 above also apply to Combined Majors.

### Honours Programs

To teach psychology at a university, to practise psychology as a profession, or to conduct independent psychological research, a graduate degree (usually the Ph.D.) is the customary requirement. Several provinces, including Ontario, and many states have laws that require, in effect, that individuals representing themselves as psychologists must have received a Ph.D. in psychological studies.

The Honours programs in Psychology are designed to give students who are preparing for graduate studies in psychology an opportunity to learn and evaluate the foundations of the science. They provide adequate preparation for graduate studies leading to a career in psychology, whatever the student's area of interest.

### B.A. with Honours in Psychology

The candidate for a B.A. with Honours in Psychology must offer nine credits in Psychology courses, with remaining courses from Psychology or other disciplines (providing not more than 12 Psychology credits are offered for the degree).

The departmental requirements for Honours psychology are:

1. Psychology 49.100;
2. Psychology 49.200;
3. Psychology 49.300;
4. all of Psychology 49.210★, 49.220★, 49.230★, 49.250★, 49.260★ and 49.270★;
5. one of the following Honours seminar courses: Psychology 49.310 (Social Psychology), 49.320 (Be-

havioural Neuroscience), 49.340 (Community Psychology and Program Evaluation), 49.350 (Developmental Psychology), 49.360 (Personality), 49.370 (Cognition), or 49.380 (Human Assessment);

6. Psychology 49.498;

7. one additional credit in Psychology;

8. at least one credit or two half credits in each of two departments or interdisciplinary areas outside of the Faculty of Social Sciences;

9. a minimum cumulative grade-point average of 6.5 in Psychology courses taken at Carleton. All Psychology courses successfully completed at Carleton will be included in this average.

#### Notes:

The 11 optional credits may be taken in any approved discipline provided that requirement 8 above is met, and:

1. the total number of Psychology credits is not more than 12;

2. a total of 11 credits are above the 100 level;

3. all courses from outside the Faculties of Arts, Science and Social Sciences meet with departmental approval.

A student in Honours may transfer, on request, to the Major program at any time and graduate at the end of the third year of studies with a B.A. provided the requirements for the three-year Major program are met. Honours students who are considering reverting to the Major program should not include more than seven Psychology credits in the first three years.

### Recommended Sequence for B.A. Honours

#### First Year

Psychology 49.100.

#### Second Year

1. Psychology 49.200 and three of: Psychology 49.210★, 49.220★, 49.250★, 49.260★, 49.270★;

2. one half credit in Psychology (either another core course listed in 1, or a Psychology option).

#### Third Year

1. Psychology 49.300;

2. an Honours Seminar course: Psychology 49.310, 49.320, 49.340, 49.350, 49.360, 49.370, or 49.380;

3. Psychology 49.230★, and another core course.

#### Fourth Year

1. Psychology 49.498;

2. one additional credit in Psychology (including any remaining core courses).

In addition to the required Honours Seminar course in the Third year, Honours students should consider taking another Honours Seminar course in the Fourth year.

### Combined Honours

With the exceptions listed below, students combining Psychology with any other discipline must meet all requirements for the B.A. with Honours in Psychology listed above with the exception of requirement 7. That is, they must offer eight credits in Psychology including 49.498.

Exceptions are as follows:

1. Combined Honours in Psychology and any of Linguistics, Mathematics or Philosophy: Seven credits in

Psychology must be offered. All requirements listed for the B.A. with Honours in Psychology apply with the exception of requirements 4 and 7; the student must offer *two credits* from requirement 4, with the constraints that: (a) at least one Natural Science core course must be offered (Psychology 49.220★ or 49.270★); and (b) at least one Social Science core course must be offered (Psychology 49.210★, 49.250★, or 49.260★).

2. Combined Honours in Psychology and any of Anthropology, Sociology, Economics or Biology: students must declare an area of research concentration at the time of application for the degree program. If the choice is Psychology, requirements are as listed for Linguistics, Mathematics or Philosophy. When Psychology is not the area of research concentration, the requirements are as for the B.A. with Honours in Psychology except that requirements 3 and 6 are waived, and the student need only offer seven Psychology credits.

3. Combined Honours in Psychology and Law: students must offer eight credits in Psychology including all requirements listed for the Honours B.A. in Psychology except requirements 7. They may, however, choose to offer Law 51.498, Honours Essay, in place of Psychology 49.498. In this case, they must offer an additional optional credit in Psychology (requirement 7).

### B.Sc. with Honours in Psychology

*Note:*

B.Sc. Honours students are urged to consult the Calendar section on general regulations of the Faculty of Science, pp. 327-334.

*First Year*

1. Mathematics 69.107★ and 69.117★;
2. two of Biology 61.100 or 61.101, Chemistry 65.100, Physics 75.100 or 75.105;
3. Psychology 49.100 as the Social Science elective;
4. one optional credit from Science, Social Sciences or Arts.

Required courses beyond First year, and the sequence in which it is strongly suggested they be taken, are as follows:

*Second Year*

1. Psychology 49.200 and two of 49.220★, 49.250★ and 49.270★;
2. Mathematics 69.257★ and 69.259★, or 69.217★ and 69.257★.
3. one credit from Arts or Social Sciences other than Psychology;
4. one optional credit.

*Note:*

Students who wish to substitute Psychology 49.300 in 2 must offer in 4 a course above the First-year level in Biology, Mathematics, Chemistry or Physics chosen with the approval of the Department of Psychology.

*Third Year*

1. one Honours seminar course selected from the following: Psychology 49.320 (Behavioural Neuroscience), 49.350 (Developmental Psychology), 49.370 (Cognition) and 49.380 (Human Assessment);
2. one of Psychology 49.220★, 49.250★ or 49.270★ if not taken previously, and 49.230★;
3. one optional credit in Psychology;

4. one credit in Arts or Social Sciences other than Psychology;

5. one credit above the First-year level in Biology, Mathematics, Chemistry or Physics.

*Fourth Year*

1. Psychology 49.498;
2. one credit in Psychology chosen from the following Science Continuation courses: Psychology 49.321★, 49.322★, 49.324★, 49.325★, 49.351★, 49.352★, 49.355★, 49.372★, 49.375★, 49.401★.
3. one optional credit in Psychology;
4. one credit above the First-year level in Biology, Mathematics, Chemistry or Physics;
5. one optional credit.

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### Criminology and Criminal Justice Concentration

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For details see p. 119.

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### Graduate Program

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The Department of Psychology offers studies leading to the degree of Master of Arts and to the degree of Doctor of Philosophy. For further details consult the Graduate Studies and Research Calendar.

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### Courses Offered

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*Notes:*

1. ★ indicates a half-credit course.
2. Many half courses are not open after the first week of registration. Registration in Winter term half courses should normally be completed during Fall registration.
3. Students should consult the class schedule to see what courses are offered in the Day and Evening divisions and what courses are not offered in 1986-87.

Psychology 49.100

#### Introductory Psychology

The course provides a foundation for the scientific understanding of human and animal behaviour. Both biological and social science approaches are considered. Lecture three hours a week.

Psychology 49.200

#### Introduction to Psychological Research and Statistics

An introduction to the various research methodologies and statistical ideas employed within contemporary psychology. Topics covered typically include experimental, observational, case study and archival techniques. The data analysis and inferential techniques are presented at a level emphasizing the elementary logical foundations of measurement, data description, inference, and hypothesis testing. Throughout, the course emphasizes basic principles rather than techniques, although both are covered.

Prerequisite: Psychology 49.100.

Three hours lecture and one hour tutorial a week.



**Psychology 49.210★****Introduction to Social Psychology**

Introduction to contemporary theory and research in social psychology. Areas covered include attitude structure and change, small groups and social learning. (Students who wish to substitute Sociology 53.210 for Psychology 49.210★ should consult their Psychology Department adviser. Students may not offer both Sociology 53.210 and Psychology 49.210★ for credit.)

Prerequisite: Psychology 49.100.

Lecture three hours a week.

**Psychology 49.220★****Biological Foundations of Behaviour**

A general introduction to the biological basis of behaviour with particular reference to biological mechanisms associated with sensory and perceptual processes, motivation, emotion, learning and cognition.

Prerequisite: Psychology 49.100.

Lecture three hours a week.

**Psychology 49.230★****Origins of Modern Psychology**

The evolution of psychology from the early seventeenth century to modern times in Europe and North America. Emphasis is on the influence of progress in the sciences and philosophy on speculation about psychological processes in humans and other animals, and on the development of psychology as an independent scientific discipline in the nineteenth and twentieth centuries.

Prerequisite: Psychology 49.100.

Lecture three hours a week.

**Psychology 49.250★****Foundations of Developmental Psychology**

Basic principles of developmental psychology with a concentration on theories and methods. Emphasis is on the psychology of childhood and adolescence.

Prerequisite: Psychology 49.100.

Lecture three hours a week.

**Psychology 49.260★****Introduction to the Study of Personality**

An introduction to the study of personality. Consideration of problems, methods and theories.

Prerequisite: Psychology 49.100.

Lecture three hours a week.

**Psychology 49.270★****Foundations of Learning and Cognition**

Learning and retention in humans and other animals, including a survey of theories, issues, methods and findings.

Prerequisite: Psychology 49.100.

Lecture three hours a week.

**Psychology 49.300****Design and Analysis in Psychological Research**

Techniques in data analysis, probability theory, sampling distribution theory and the ideas and procedures of estimation, classical and Bayesian approaches to hypothesis testing, linear regression and curve fitting, distribution free hypothesis testing, and the analysis of variance methods in experimental design will be covered. Throughout the course, use of the computer for data handling and analysis is stressed and use of available programs such as BMDP and SPSS is required.

Prerequisites: Psychology 49.200 (or 49.200★, no longer offered). Intended for Honours students in Psychology.

Three hours lecture and one hour tutorial a week.

**Psychology 49.310****Social Psychology (Honours Seminar)**

An analysis of historical and contemporary developments in social psychology theory, research and methodology. Students may be required to complete independent research projects.

Prerequisites: Psychology 49.200 (or 49.200★, no longer offered) and 49.210★. Permission of the Department required; limited enrolment; intended for Honours students.

Seminars, lectures, and laboratory tutorial, six hours a week.

**Psychology 49.311★****Social Problems**

An analysis of one or more social problems from the point of view of social psychology. The problems studied vary from year to year and may include war and peace, prejudice and discrimination, gender roles, politics and social change, leisure and quality of working life.

Prerequisite: Psychology 49.210★.

Not offered 1986-87.

**Psychology 49.312★****Cognitive Processes in Social Psychology**

In-depth coverage of one or more sub-areas of social psychology introduced in Psychology 49.210★. Topics may include attitudes, impression formation, attribution of social causality, decision making, and social judgment.

Prerequisite: Psychology 49.210★.

Lecture and seminar three hours a week.

**Psychology 49.313★****Group Processes in Social Psychology**

In-depth coverage of one or more sub-areas of social psychology introduced in Psychology 49.210★. Topics may include interaction in the dyad, coalition formation in larger groups, history and theory of small group research, North American, West-European and East-European models of group behaviour, and training groups in industry.

Prerequisite: Psychology 49.210★.

Lecture and seminar three hours a week.

**Psychology 49.320****Behavioural Neuroscience (Honours Seminar)**

A detailed consideration of biological approaches to the study of behaviour and of research methods used in behavioural neuroscience.

Prerequisites: Psychology 49.200 (or 49.200★, no longer offered) and 49.220★. Permission of the Department required; limited enrolment; intended for Honours students.

Seminars, lectures, and laboratory six hours a week.

**Psychology 49.321★****Comparative Psychology**

An introduction to the development of behavioural capacity from unicellular organisms to man.

Prerequisite: Psychology 49.220★.

Not offered 1986-87.

**Psychology 49.322★****Sensory Processes**

The physiological basis of sensation. Topics include sensory mechanisms, neuropsychological bases of perception and psychological phenomena encountered in the various senses.

Prerequisite: Psychology 49.220★.

Not offered 1986-87.

Psychology 49.323★

**Field Course in Animal Behaviour**

Offered in the Department of Biology as Biology 61.365★. Only those modules dealing with animal behaviour topics may be offered for Psychology credit.

Prerequisite: Permission of the Department.

Not offered 1986-87.

Psychology 49.324★

**Drugs and Behaviour**

An introduction to synaptic mechanisms and the arrangements of the transmitter-specific brain systems, followed by a discussion of neuro-pharmacological bases of normal and abnormal behaviour and of the behavioural effects of various classes of psychoactive drugs such as stimulants, tranquilizers, opiates, etc.

Prerequisite: Psychology 49.220★.

Lecture/seminar three hours a week.

Psychology 49.325★

**Psychopharmacology and Behavioural Medicine**

An examination of the relationship between endogenous neurochemical, hormonal and immunological states and various physiological and behavioural pathologies. The contribution of psychological variables to these pathologies will be assessed.

Prerequisite: Psychology 49.324★ (or 49.327★, no longer offered) or permission of the Department.

Not offered 1986-87.

Psychology 49.331★

**Patterns of Twentieth-Century Psychology**

Systems and theories that have determined the course of experimental psychology since 1890. The collapse of structuralism and the rise of functionalism, Gestalt and behaviourism. The behaviourist revolution, and the major mid-twentieth-century theories in psychology.

Prerequisites: Psychology 49.100 and 49.230★ (or 49.300★, no longer offered).

Not offered 1986-87.

Psychology 49.340

**Community Psychology and Program Evaluation (Honours Seminar)**

A survey of the major theoretical and research efforts in community psychology and the major methodological issues in program evaluation. Major themes include: the analysis of human-social problems; the social context within which behaviour problems are generated, maintained and labelled as problems; a commitment to systematic assessment and conceptualization, intervention and research/evaluation; and the realities of formal and informal decision-making processes within organizations. Students may be required to participate in field work.

Prerequisites: Psychology 49.200 (or 49.200★, no longer offered) and 49.210★. Permission of the Department required; limited enrolment; intended for Honours students.

Seminars, lectures, tutorial, and field work six hours a week.

Psychology 49.342★

**Criminal Behaviour**

An examination of behavioural approaches to the classification and treatment of offenders. Theories and research relevant to selected patterns of law-breaking and selected offender types are reviewed. The value of behaviour modification and counselling programs within prisons is examined.

Prerequisite: Psychology 49.210★ or 49.260★.

Lecture/seminar three hours a week.

Psychology 49.343★

**Addiction**

A critical review of social-psychological theories and research on the acquisition and maintenance of addictive behaviour. The rationale and outcome of treatment programs for the abuse of alcohol, tobacco, the opiates and the amphetamines.

Prerequisites: Two credits in Psychology including Psychology 49.100.

Lecture three hours a week.

Psychology 49.344★

**Play, Recreation and Sport Psychology**

Behavioural and experiential aspects of selected forms of non-work activity are analyzed to establish how the activities are to be identified, what functions they serve and what factors control or influence their modes of expression.

Prerequisites: Psychology 49.200 (or 49.200★, no longer offered) and at least one of Psychology 49.210★, 49.250★ or 49.260★.

Not offered 1986-87.

Psychology 49.345★

**Psychology of Motivation and Emotion**

A historical review of the concepts of motivation and emotion is provided as a foundation for a detailed examination of such current concepts as anxiety, stress and depression, among the emotions, and obesity, sexual behaviour and the need to achieve, among the motivations. Material is drawn from the physiological, cognitive, social and personality areas of psychology to gain a comprehensive coverage of the selected topics.

Prerequisite: Psychology 49.100.

Three hours a week.

Psychology 49.346★

**Psychological Factors in Health and Illness**

Topics covered include sociocultural influences on physical health, psychological factors in physical disease, behavioural diagnostic techniques, pain and its regulation, factors affecting compliance to therapy, and behavioural variables in the treatment and management of physical disorders.

Prerequisite: Psychology 49.100.

Lecture three hours a week.

Psychology 49.347★

**Behaviour Modification**

Basic principles of learning and operant conditioning are related to aspects of behavioural analysis including techniques such as systematic desensitization, relaxation and counter-conditioning. Representative problem areas include retardation, obesity, smoking, alcoholism and phobias.

Precludes additional credit for Psychology 49.272★ and 49.341★, no longer offered.

Prerequisite: Psychology 49.270★.

Not offered 1986-87.

Psychology 49.350

**Developmental Psychology (Honours Seminar)**

The major theoretical and empirical approaches within developmental psychology are examined through a detailed consideration of selected topics. Students may be required to complete independent research projects.

Prerequisites: Psychology 49.200 (or 49.200★, no longer offered) and 49.250★. Permission of the Department required; limited enrolment; intended for Honours students.



Seminars, lectures and laboratory tutorial six hours a week.

Psychology 49.351★

**Psychology of Early Childhood**

Development of the child from birth through the pre-school years of life; effect of early experience on later behaviour.

Prerequisite: Psychology 49.250★.

Three hours a week.

Note:

No more than two of the following developmental branching courses may be credited towards the B.A. degree: Psychology 49.351★, 49.352★, 49.353★, 49.354★.

Psychology 49.352★

**Psychology of Middle Childhood**

Development of the child during the elementary school years.

Prerequisite: Psychology 49.250★.

Three hours a week.

Note:

No more than two of the following developmental branching courses may be credited towards the B.A. degree: Psychology 49.351★, 49.352★, 49.353★, 49.354★.

Psychology 49.353★

**Psychology of Adolescence**

Psychological growth and development from puberty to maturity.

Precludes additional credit for Interdisciplinary 04.201, no longer offered.

Prerequisite: Psychology 49.250★.

Three hours a week.

Note:

No more than two of the following developmental branching courses may be credited towards the B.A. degree: Psychology 49.351★, 49.352★, 49.353★, 49.354★.

Psychology 49.354★

**Psychology of Adulthood and Old Age**

Development and change after the age of physical maturity.

Precludes additional credit for Psychology 49.254★ or 49.257★, no longer offered.

Prerequisite: Psychology 49.250★.

Three hours a week.

Note:

No more than two of the following developmental branching courses may be credited towards the B.A. degree: Psychology 49.351★, 49.352★, 49.353★, 49.354★.

Psychology 49.355★

**Exceptional Children**

Selected topics concerning exceptional children such as mentally retarded, brain damaged, physically handicapped, disturbed and gifted children.

Precludes additional credit for Psychology 49.256★, no longer offered.

Prerequisite: Psychology 49.250★.

Three hours a week.

Psychology 49.360

**Personality (Honours Seminar)**

Issues and research methodologies in the study of personality. Included may be a consideration of research on psychopathology and personality theory, and evaluation of psychotherapy/counselling process and outcome. Students may be required to complete independent research projects.

Prerequisites: Psychology 49.200 (or 49.200★, no longer

offered) and 49.260★. Permission of the Department required; limited enrolment; intended for Honours students.

Seminars, lectures and laboratory tutorial six hours a week.

Psychology 49.361★

**Psychoanalytic Theories**

Origin and evaluation of psychoanalytic theories with an emphasis on Freud and Jung.

Prerequisite: Psychology 49.250★ or 49.260★.

Lecture/seminar three hours a week.

Psychology 49.362★

**Self Theories**

An evaluation of the assumptive bases and research evidence relating to the positions of Rogers, Maslow and others.

Prerequisite: Psychology 49.260★.

Not offered 1986-87.

Psychology 49.363★

**Psychology of Women**

An examination of the literature on the psychology of women. Topics to be considered include: theories of female personality development, sex differences in ability and personality, biological influences on female behaviour, female sexuality, sex roles, women's roles throughout the life span.

Prerequisite: At least one of Psychology 49.210★, 49.250★ or 49.260★.

Lecture three hours a week.

Psychology 49.364★

**Abnormal Psychology**

History of the concept of behavioural abnormality. Theory and selected research dealing with the nature and etiology of behavioural abnormality.

Prerequisite: Psychology 49.250★ or 49.260★ or 49.100 and Third-year standing.

Lecture three hours a week.

Psychology 49.365★

**Transpersonal Psychology**

This course represents the viewpoint that the scientific study of direct experience can provide valuable knowledge concerning the nature of human consciousness. Concern is also directed towards understanding techniques for altering consciousness and to systems of thought that make the experiences meaningful.

Prerequisite: Psychology 49.200 (or 49.200★, no longer offered) or 49.300 or three credits in Psychology. Limited enrolment.

Not offered 1986-87.

Psychology 49.370

**Cognition (Honours Seminar)**

Issues and research methodologies in the study of cognitive processes involved in perception, attention, language, reasoning, problem solving, decision making, human learning, and memory are considered. Throughout the course the major theoretical issues and the empirical studies of human cognition are examined. Students may be required to complete independent research projects.

Prerequisites: Psychology 49.200, (or 49.200★, no longer offered) and 49.270★. Permission of the Department required; limited enrolment; intended for Honours students.

Seminars, lectures, and laboratory six hours a week.

Psychology 49.372★

**Perception**

A consideration of data and theory concerning perceptual processes. Such topics as psychophysical methodology, perception of form and space and perceptual learning are discussed.

Prerequisite: Psychology 49.100.

Lecture three hours a week.

Psychology 49.375★

**Animal Learning**

A survey of research methods used in the study of learning, and the application of these methods to psychopharmacology and behavioural neuroscience.

Prerequisites: Psychology 49.200, (or 49.200★, no longer offered) and 49.270★.

Not offered 1986-87.

Psychology 49.380

**Human Assessment (Honours Seminar)**

A critical appraisal of assessment techniques used for research, classification, and clinical/counselling purposes. Topics may include reliability, validity, and utility of tests, individual difference measurement in general psychology, ethical issues in testing, and alternatives to orthodox assessment. Laboratory exercises expose the student to selected psychometric and assessment techniques.

Prerequisite: Psychology 49.200, (or 49.200★, no longer offered), and at least one of 49.210★, 49.250★, or 49.260★. Permission of the Department required; limited enrolment; intended for Honours students.

Lectures, seminars, and laboratory tutorial, six hours a week.

Psychology 49.391★, 49.392★

**Practicum in Community Psychology**

Through seven-hour-a-week field placements and regular class forums, students are provided with the opportunity to pursue personal learning objectives concerning the application of psychology within the community. Academic requirements are satisfied through a term paper, which integrates the experiential knowledge gained in the placement with theoretical and empirical knowledge gained from the literature review.

Prerequisite: Open to Third- and Fourth-year students in Psychology with permission of the Department. Students registered in the Criminology and Criminal Justice Concentration should enroll in Psychology 49.393★, 49.394★.

Psychology 49.393★, 49.394★

**Field Placement: Criminology and Criminal Justice Concentration**

Experience in an agency setting provides the basis for translating the academic dimension into practical involvement in various aspects of criminal justice. These courses are graded on a satisfactory/unsatisfactory basis. There is no supplemental examination in this course.

Prerequisite: Open only to those students formally admitted to and registered in the Criminology and Criminal Justice Concentration.

Psychology 49.401★, 49.402★, 49.403★

**Special Topics in Psychology**

The topics of this course, to be offered as demand warrants, vary from year to year and are announced well in advance of the period of registration. A list of this year's topics can be obtained from the Psychology Undergraduate Office (B550 Loeb Building) after March 1.

Psychology 49.431★

**Precursors of Psychology**

Ideas that shaped the emergence in the modern era of psychology as an independent discipline, as evidenced in man's speculations on his nature and his relations to the universe. Mind and body in ancient Egypt, Greece and Rome. Arabic influences and the Middle Ages. Elizabethan psychology. The case for a science of man. Prerequisites: Psychology 49.100 and 49.230★ (or 49.300★, no longer offered).

Not offered 1986-87.

Psychology 49.432★

**Observation, Description and Explanation in Psychology**

Problems of communication, concept formation and exploration in biosocial science are discussed. The interplay of facts, methods, models, theories and the human values which these serve are also explored.

Prerequisite: Psychology 49.100.

Not offered 1986-87.

Psychology 49.490★, 49.492★

**Independent Study**

A reading or research course for selected students who wish to investigate a particular topic of interest. Available to Third- and Fourth-year students only. Normally students may not offer more than one credit of independent study in their total program.

Prerequisite: Permission of the Department.

Psychology 49.498

**Thesis for Honours in Psychology**

Candidates for the Honours degree in psychology are required to present a thesis conducted under the supervision of a faculty adviser. The project may take the form of an experiment, a case study, a survey, archival research, or such other work as meets with the adviser's approval. The thesis is evaluated by both the adviser and the Psychology 49.498 co-ordinator.

*Note:*

Summer session registration in Psychology 49.498 is available only to students who were officially registered in and attended meetings of the course during the immediately preceding Fall/Winter session.

*Note:*

Faculty regulations concerning the Honours thesis are detailed on p. 89.

Prerequisite: Fourth-year Honours standing in Psychology; Psychology 49.300; completion of an Honours Seminar course.

**Summer School and Evening Division Courses**

The Department of Psychology regularly offers Psychology 49.100, 49.200, 49.210★, 49.220★, 49.230★, 49.250★, 49.260★, 49.270★ and a variety of optional branching courses in the Summer and/or Evening division sessions. This makes it possible for students to satisfy, within a reasonable period, the requirements for the B.A. Psychology Major program. The Department cannot guarantee that courses required to meet the requirements for the B.A. Honours degree or B.Sc. Honours degree will be available in either the Summer session or the Fall/Winter Evening session.



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## Officers of the School

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### Director

Allan M. Maslove

### Supervisor of Undergraduate Studies

Donald Swartz

### Faculty

Richard D. Abbott

Frances D. Abele

Manfred A. Bienefeld

Calum M. Carmichael

G. Bruce Doern

Katherine Graham

Harvey Lithwick

Rianne Mahon

Allan M. Maslove

Michael Prince

Sharon Sutherland

Donald Swartz

Eugene Swimmer

George Warskett

V. Seymour Wilson

Stanley Winer

### Committee of Management

Richard Abbott (*Law*)

Frances D. Abele (*Public Administration*)

A.J. Bailetti (*Business*)

M. Bienefeld (*Public Administration*)

C. Carmichael (*Public Administration*)

G.B. Doern (*Public Administration*)

D. Elliott (*Law*)

D.P. Forcece (*Dean, Faculty of Social Sciences*)

W.I. Gillespie (*Economics*)

K. Graham (*Public Administration*)

H. Lithwick (*Public Administration*)

R. Mahon (*Public Administration*)

A. Maslove (*Public Administration*)

B. McFarlane (*Sociology*)

M. Prince (*Public Administration*)

S. Sutherland (*Public Administration*)

D. Swartz (*Public Administration*)

E. Swimmer (*Public Administration*)

G. Warskett (*Public Administration*)

V.S. Wilson (*Public Administration*)

S. Winer (*Public Administration*)

C. Winn (*Political Science*)

### Student Representatives

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## General Information

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The School of Public Administration was established in 1953 through the assistance of a generous grant from the Atkinson Charitable Foundation.

The programs of the School have been developed out of an awareness of the need to provide a general education that will familiarize public servants and students contemplating a career in government service with the main organizational, political, economic and legal elements of the environment of the public service.

The Bachelor of Public Administration program is an Honours program planned on the assumption that the most suitable education for a person desiring to be a capable public administrator is broad and general in

base, with an emphasis on political economy. While it is designed to be of particular use to students contemplating careers in public employment, it also provides a sound general education for those considering the legal profession or business.

The Certificate program, on the other hand, will be most helpful to those who desire training in fields directly related to public administration. This program is designed to encourage public servants without university training to broaden their background. Since they are allowed degree credit for this work, they will also be encouraged, upon its completion, to continue toward a Bachelor of Arts or Bachelor of Public Administration degree.

Public employees not interested in registering for studies leading to a degree, a certificate or a diploma should note that they may, as Special students, take any of the subjects listed in public administration programs for which they have the requisite background. Their attention is directed also to non-credit extension courses related to public administration that are offered from time to time by the University. Details may be obtained from the School of Continuing Education.

Because Carleton University is located in the capital city and enjoys close relations with many government agencies, students of public administration may profit greatly from the unique advantages thus offered. Such institutions as the Library of Parliament, The National Library, the Public Archives, Statistics Canada, and the specialized libraries of the several government departments, all offer unusual opportunities for study in Ottawa.

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## Bachelor of Public Administration

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Qualifying University and First years are offered in both Day and Evening divisions. The last three years are offered in the Day division only.

### Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all School regulations and requirements as set out below.

### Admission Requirements

Same as for Faculty of Social Sciences. (See p. 88.)

Beginning with the academic year 1986-87, admission to Second year will be guaranteed only to Public Administration students who complete First year with grades of *B* or better in both Economics 43.100 and Political Science 47.100 and whose overall grade-point average in First year is at least 8.0 (calculated on five credits, including failures).

If spaces are available, other students will be permitted to transfer into Second year Public Administration provided they have at least an 8.0 average in their First year and provided they complete both Economics 43.100 and Political Science 47.100 with grades of *B* or better.

Requirements for continuation in Honours are found on pp. 88-89.

### Course Requirements

Candidates for the degree of Bachelor of Public Administration must satisfy all requirements for the B.A. with Honours.

The School requires Honours students to have a reading knowledge of French. This requirement is satisfied by successfully completing one of the following courses:

*French*

20.106★ Reading French

20.108 Advanced French for Non-Majors

or

by demonstrating an equivalent level of reading proficiency based upon the placement procedure of the Department of French.

Students should satisfy the French requirement by the end of their Second year.

The School strongly encourages students to continue gaining proficiency in the French language through their optional course selections. Those who choose to do so should consult the Department of French.

The School also requires that at least one optional credit be selected from the 300 or 400 level.

*First Year*

Students contemplating study in Public Administration must take Economics 43.100 and Political Science 47.100 in the First year. Students are advised to meet the School's language requirement in their First year. If this is not feasible then the language requirement must be completed by the Second year of the program.

*Second Year*

1. *Business*

42.100 An Introduction to Accounting, or

42.101★ Principles of Financial Accounting, and

42.102★ Management Accounting

2. *Economics*

43.201★ Introduction to Microeconomic Theory and Analysis, and

43.211★ Introduction to Macroeconomic Theory and Analysis

3. *Law*

51.205 Introduction to Public Law

4. *Political Science*

47.200 Canadian Government and Politics

5. One approved optional credit (French requirement must be completed if not taken in First year)

*Third Year*

1. One credit in the field of Organizational Behaviour consisting of:

*Business*

42.214★ Introduction to Management; and one of the following related courses:

42.308★ Cost Accounting

42.309★ Management Accounting Systems

42.311★ Micro-Organizational Behaviour

*Economics*

43.357★ Introduction to Industrial Relations

*Political Science*

47.305★ Ontario Government and Politics

*Law*

51.345★ Labour Law

*Sociology*

53.245 The Sociology of Work: Occupations and Professions

53.346★ Industrial Sociology

2. *Economics*

43.441★ Public Finance: Taxation

43.442★ Public Finance: Expenditures

3. One of:

*Economics*

43.220 Statistical Methods in the Social Sciences

*Political Science*

47.270 Quantitative Political Science Research Methods

4. *Political Science*

47.340 Canadian Public Administration

5. One approved optional credit

*Fourth Year*

1. *Political Science*

47.401 Canadian Public Policy

2. *Law*

One credit or equivalent chosen from:

51.353 Civil Liberties and Human Rights

51.354★ Law and Native Peoples of Canada

51.374 Local Government Law

51.380 Law of Environmental Quality

51.440★ The Arbitration Process in Industrial Relations

51.445★ Labour Relations in the Public Service

51.450 Canadian Constitutional Law

51.456★ Administrative Law I

51.457★ Administrative Law II

3. *Public Administration*

50.400 Public Administration Seminar

4. *Public Administration*

50.498 Honours Essay, or

50.499 Honours Comprehensive

5. One approved optional credit

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**Certificate in Public Service Studies**

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Offered in both Day and Evening divisions.

This course is designed primarily for public employees who seek special training in public service subjects at the undergraduate level.

Courses taken for the certificate are normally creditable towards a Bachelor of Public Administration or Bachelor of Arts degree. A transfer student from the certificate program into the Bachelor of Public Administration program will normally be required to take at least 14 further credits in addition to those required for the certificate, to be recommended for the degree. A transfer student into a Bachelor of Arts program will normally be required to take at least nine further credits. At least five of the credits required for either degree must be completed after the awarding of the certificate.

Full-time candidates for the certificate are invited to enquire about possible financial aid.



### Admission Requirements

The Ontario Secondary School Honour Graduation Diploma (or the equivalent) with a minimum overall average of 60 percent, or Mature Matriculation. (see Mature and Special Admissions, p. 33).

Candidates may be admitted with advanced standing, but must complete at least four credits, including all core courses, for the Certificate at Carleton University.

Students who have completed an undergraduate degree are not eligible for admission to the certificate program. They are encouraged, however, to investigate the undergraduate and graduate degree and diploma programs offered by the School.

### Course Requirements

The following courses are required and the following order is suggested:

1. Political Science 47.100
2. Economics 43.100
3. History 24.231 or Economics 43.325
4. Political Science 47.200
5. Political Science 47.340
6. One other credit chosen in consultation with the Director according to the needs of the students.

### Academic Standing

A candidate for the certificate must obtain a grade of C or better in at least half of the credits taken at Carleton University for the certificate.

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### Courses Offered

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Public Administration 50.400

#### Public Administration Honours Seminar

A research seminar for Fourth-year Public Administration students only. The seminar is supported by the active involvement of several faculty members, each committing about three or four weeks to participation in seminar discussions and/or lectures. While the specific content of the course may change each year, the course deals more extensively than in any previous year's course with areas or sectors such as the following: the role and management of state enterprise; regulatory processes and outcomes; public sector industrial relations; public sector financial accountability.

Day division: Three hours a week.

Public Administration 50.498

#### Honours Essay

Tutorial hours arranged.

Public Administration 50.499

#### Honours Comprehensive Examination

Required in Fourth year in public administration if Honours Essay (Public Administration 50.498) is not written. The Honours Comprehensive Examination examines the students across the discipline bases or areas on which the Honours program is built: (a) political science, (b) economics, (c) law, (d) management and organizational studies. The examination is held on the third Monday in March. Details and preparatory reading lists can be obtained from the Supervisor of Undergraduate Studies. A grade of B- or better must be achieved.

# Department of Religion

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## Officers of Instruction

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### *Chair*

Leonard T. Librande

### *Professors*

John P. Dourley

Antonio R. Gualtieri

Robert M. Polzin

Stephen G. Wilson

### *Associate Professors*

Nalini Devdas

Leonard Librande

Eugene Rothman

### *Assistant Professor*

Joseph G. Ramisch

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## General Information

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The general purpose of courses offered in this Department is to promote a sensitive and intellectually mature understanding of the basic ideas and concerns of outstanding religious leaders and movements irrespective of whether these coincide or conflict with individual convictions. Religious writings are studied critically, in an attempt to understand their meaning, to grapple with their problems and to assess their significance both in their original cultural context and for our own situation.

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## Programs of Study

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Students who elect religion as their Major or Honours subject will consult with their respective departmental adviser before registration each year.

Department program advisers are:

*Honours*, R.M. Polzin

*Majors*, Eugene Rothman

*Graduate Supervisor*, Leonard Librande

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## Main Areas of Study

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Religion courses are offered in three main areas:

1. Philosophical-Theological Studies of Religion: Religion 34.201, 34.235, 34.238★, 34.260, 34.265★, 34.266★, 34.280, 34.306, 34.331★, 34.332★, 34.390, 34.488★, 34.490, 34.492, 34.498, 34.499.

2. History of Religion: Jewish and Christian Traditions: Religion 34.102★, 34.103★, 34.107★, 34.108★, 34.219, 34.225, 34.270, 34.271★, 34.272★, 34.273★, 34.321★, 34.323, 34.330, 34.331★, 34.332★, 34.338★, 34.378★, 34.390, 34.486★, 34.490, 34.492, 34.498, 34.499.

3. History of Religion: Other Religious Traditions: Religion 34.105★, 34.106★, 34.109★, 34.204, 34.205, 34.211★, 34.212★, 34.230★, 34.278, 34.320★, 34.331★, 34.342★, 34.390, 34.484★, 34.490, 34.492, 34.498, 34.499.

For classification of Religion 34.237★, 34.331★, 34.332★, 34.336★ and 34.390 each year, consult the Majors Adviser.

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## Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all departmental regulations and requirements as set out below.

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## Major Programs

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Students majoring in Religion shall acquire six credits in Religion. Of these six credits, Religion 34.202 and one credit at the 300 level or above are required. In addition, of these six credits, at least one must be in each of the three main areas of study as set forth above. Courses shall be selected in consultation with the Majors Adviser.

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## Combined Major Programs

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A Major combining Religion with another subject must include at least four credits in Religion. The precise pattern of courses for each student must be approved by the Departmental Majors Adviser.

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## Honours Programs

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### **Honours in Religion**

The Honours program may be entered at the beginning of the First year or in later years or by transfer from the Major program.

Students in the Honours program shall acquire ten credits in Religion. In acquiring six of these credits the student shall fulfil the Majors requirements set forth above. In addition, the student shall acquire four other credits of which two shall be at the 400 level, that is, Religion 34.498 or other 400-level seminars. Courses shall be selected in consultation with the Honours Adviser.

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## Combined Honours Program

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Students enrolled in a Combined Honours program are required to take seven credits in Religion. In acquiring six of these credits the student shall fulfill the Majors requirements set forth above. In addition, the student shall acquire one credit at the 400 level. The precise pattern of courses for each student must be approved by the Departmental Honours Adviser.

### **Combined Honours in Philosophy and Religion**

*Philosophy*: At least seven credits including:

1. an introductory course or equivalent;

2. 6.0 credits beyond the 100 level including:

(a) 2.0 credits in history of philosophy;

(b) Philosophy 32.260, or if taken already as Religion 34.260 or if not available, 1.0 credit in philosophical problems, selected in consultation with the Honours Adviser;

(c) 1.0 credit at the 400 level.

*Religion*: Requirements are those listed above for the Combined Honours program.



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**Courses Offered**


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**Note:**

Religion 34.102★ and 34.103★ are so scheduled as to allow the student to take one of them in each term in the same time slot. Students who took Religion 34.120, no longer offered, may not register for either of these courses.

**Religion 34.102★****Introduction to the Literature of the Hebrew Bible (Old Testament)**

An examination of the books of the Hebrew Bible. Emphasis is given to literary approaches to the text, that is, to the kind of disciplined attention that has illuminated the manifold examples of world literature through a variety of critical approaches.

Day division, Fall term; Evening division, Winter term.

**Religion 34.103★****Introduction to New Testament Literature**

A general survey of New Testament literature. An examination of its background in the Roman world and sectarian Judaism. The formation of the Canon and the Synoptic Problem. The texts focused on are the Gospels, Acts, writings of Paul, the Johannine literature and the Book of Revelation.

Students taking this course are also encouraged to take Religion 34.102★.

Evening division, Fall term; Day division, Winter term.

**Note:**

Religion 34.105★ and 34.106★ are so scheduled as to allow the student to take one of them in each term in the same time slot.

**Religion 34.105★****Introduction to the Hindu Tradition**

An introduction to the basic beliefs, myths and symbols, methods of meditation and ethical principles developed in the main branches of the Hindu tradition. The study includes a survey of movements stemming from the Hindu tradition such as Transcendental Meditation and Krishna Consciousness.

Day division, Winter term.

**Religion 34.106★****Introduction to the Buddhist Tradition**

An introduction to the basic beliefs and practices of the Buddhist tradition and a brief survey of its developments and transformations in India, Sri Lanka, Southeast Asia, Tibet, China and Japan.

Day division, Fall term.

**Religion 34.107★****Christianity**

An introduction to Christian thought, Catholic and Protestant, concerning such major issues as the character of God, the role of Christ and the Church, the authority of the Bible, human nature and destiny, the ecumenical and charismatic movements, the ordination of women, and the impact of secular culture.

Day division, Winter term.

**Religion 34.108★****Introduction to Judaism and the Jewish People**

An introduction to Judaism and the Jewish people from the earliest times until the present day. Special emphasis is placed on the history of the Jewish people in the rabbinic age, Jews in the Muslim world, the medieval era, and in the modern era in Europe, North America and

Israel. The course also deals with the organization, basic beliefs, social and ethical practices of the Jews and Judaism.

Evening division, Fall term; Day division, Winter term.

**Religion 34.109★****Introduction to Islam**

An introduction to the Muslim religious tradition and investigation of its organization, basic beliefs, social and ethical principles and practices.

Day division, Fall term.

**Religion 34.201****Women in Religious Traditions**

Feminine symbols and historical attitudes towards women in religion. Themes such as the following are examined: traditional archetypes of women as earth mother, personified wisdom, temptress and virgin; the status of women in major religious traditions both western and eastern; the application of contemporary theologies of liberation to the feminist movement.

Day division.

**Religion 34.202****Interpretations of Religion**

This course surveys modern enquiries into the nature of religion from various perspectives such as anthropology, history, psychology, sociology and theology. Contrasting views of self, society, nature, God, history and ultimate destiny conveyed by the myths, symbols, scriptures, doctrines, codes and rituals of religious traditions are examined. Specialists within the department lecture on specific religious traditions.

Day division.

**Religion 34.204****The Hindu Tradition: A Historical Survey**

A discussion of the systems of thought and the techniques of yoga developed in the Hindu tradition, with special emphasis on Vedanta. The study includes a discussion of the responses of Hinduism to the impact of modernity.

Evening division.

**Religion 34.205****The Buddhist Middle Way: Its Indian Developments**

A survey of the concepts and techniques of meditation developed in Indian Buddhism from its origin until the twelfth century A.D.; an introduction to Buddhist art and mythology; a brief account of Tantric Buddhism in India and Tibet.

Not offered 1986-87.

**Religion 34.211★****Ancient Near Eastern Religions**

An investigation of selected writings in English translation from Egypt, Mesopotamia, and Israel. The writings studied include narrative, myths, wisdom literature, hymns and poetry. Major themes of this literature include: the world of the gods; the creation of the universe; friendship; the inevitability of death; how to succeed in business and life.

Day division, Fall term.

**Religion 34.212★****Graeco-Roman Religions**

A study of selected topics in Graeco-Roman religion, such as Homeric religion, chthonic cults, the Sophists, astrology, ruler cults, mystery religions and gnosticism.

Not offered 1986-87.

Religion 34.219

**Life, Thought and Wisdom in Ancient Israel**

An examination of the major methods used by scholars in studying the Hebrew Bible (i.e., source criticism, form criticism, and tradition history) and how these relate to new approaches such as literary or structural analysis. Topics include creation and myth, Israel's patriarchs, the exodus from Egypt, revelation at Sinai, the occupation of Canaan, tensions between religious faith and personal experience, God and the presence of suffering in the world, rules for success in life and business, the religious sceptic, the problems of suicide and the delights of human love.

Day division.

Religion 34.225

**The Life and Teaching of Jesus**

The course is concerned with a systematic study of the available records of the life of Jesus. Class periods are mainly taken up with free class discussions of successive sections of the gospel parallels of Matthew, Mark and Luke. There are accompanying lectures and readings on the historical context of the life of Jesus and on the milieu within which the records developed.

Day division.

Religion 34.230

**Mysticism in Religious Traditions**

A historical, comparative and critical study of mysticism within selected religious traditions such as the Hindu, Buddhist, Jewish, Christian and Muslim. Issues addressed include the distinctive features of historical instances of mysticism, common structures of mystical experience, the truth claims of mysticism and its possible significance for interreligious dialogue.

Not offered 1986-87.

Religion 34.235

**Religion and Contemporary Moral Issues**

An analysis of the nature of religious ethics, both the explicit moral principles and rules of various religious traditions, and the general moral perspectives generated by religious images of ultimate reality, history, human nature and the physical world. In the light of this, contemporary moral issues such as the following are examined: cultural integrity (e.g., Indian, Inuit, Québécois), violent liberation and just war, crime and punishment, sexuality, role of men and women, marriage, abortion, alienation in modern society, drugs, economic order and conflict, ecology and pollution.

Prerequisite: Any other Religion course or permission of the Department.

Not offered 1986-87.

Religion 34.237★

**Selected Topics in Religion**

Content of this course varies from year to year.

Not offered 1986-87.

Religion 34.238★

**Death and Afterlife**

The meaning of death and afterlife in some religious traditions and secular philosophies with emphasis on the Hindu teaching of the immortal soul; the Hebraic idea of collective survival; the Christian doctrine of resurrection of the body; the Buddhist conception of no-soul and nirvana.

Day division, Fall term: Lecture-discussion periods two hours a week.

Religion 34.260

**Philosophy of Religion**

Offered in the Department of Philosophy as Philosophy 32.260.

Not offered 1986-87.

Religion 34.265★

**Historic Figures in the Psychology of Religion**

Discussion of religiously significant texts from the works of William James, Sigmund Freud and C.G. Jung.

Prerequisite: One course in Religion or Psychology or permission of the Department.

Not offered 1986-87.

Religion 34.266★

**Contemporary Psychologies of Religion**

An examination of developmental, experimental, humanistic and existential theories in psychology as these shed light on religious thought, behaviour and institutions.

Prerequisite: One course in Religion or Psychology or permission of the Department.

Not offered 1986-87.

Religion 34.270

**The Development of Christian Thought**

The historical and cultural development of selected aspects of Christian thought from its origins to the modern period. Problems considered are the early shift from a semitic to a hellenistic culture; the beginnings of the church as an institution; the development of thinking about Jesus in the early councils; conciliarism and other theories on the nature of the church; medieval efforts at reform; issues in the Protestant Reformation and its aftermath. Analysis of the way change and development have taken place in Christianity is also included.

Day division.

Religion 34.271★

**Judaism and the Jewish People: The Early Period**

A study of the history of Judaism and the Jewish people from the Maccabees to the Rabbinic Age. Attention is given to the rise of sectarian movements (Pharisees, Saducees and Qumran Conventurers), the rise of Christianity, revolutionaries such as the Zealots and Bar Kochba, the Jewish responses to Hellenism, the reshaping of Judaism after the destruction of the Second Temple, and Rabbinic Judaism in Palestine and the Diaspora.

Day division, Winter term.

Religion 34.272★

**Judaism and the Jewish People: Survival in Medieval Europe**

Jewish life in the medieval world, from the Crusades until the French Revolution, with emphasis on the evolution, structure and organization of the Jewish community in the Ghetto, religious movements such as mysticism, the false messiahs, and the rise of the Jewish Enlightenment and Hasidism, and Christian-Jewish relations.

Not offered 1986-87.

Religion 34.273★

**Judaism and the Jewish People: The Challenge of the Modern Age**

The response of the Jews and Judaism to the challenges of modernity: the French Revolution and Emancipation; the spread of the Jewish Enlightenment; the religious reaction; Reform and Conservative Judaism; secular ideologies, nationalism and Zionism; the growth of the Jewish community in North America; anti-semitism and



the Holocaust; and the emergence of the State of Israel. Winter term, Evening division.

Religion 34.274

**The Formative Periods of Islam**

A study of one major period in the development of Islam: (1) *The Classical Period (610-1258)* Study of the transformation of an Arab sect into a universal religious community dominating an empire and of the factors which made it a successful religious culture, or (2) *The Medieval Period (1258-1798)* Study of the consolidation of the religious and cultural dimensions of the Muslim community in the period of the great empires. Topic for 1986-87: The Classical Period. Day division.

Religion 34.278

**The Middle East: 1798 to the Present**

The history of the development of the civilization and culture of the Middle East from 1798 to the present with special emphasis on the mutual discovery of East and West, the search for identity, the impact of colonialism and international rivalry, and social, religious and cultural change within a continuing tradition. (Offered in the Department of History as History 24.278.) Day division: Lecture-discussion periods two hours a week.

Religion 34.280

**Modern Religious Thought**

An examination of the major currents and developments of religious and philosophical thought among Protestants and Catholics in the nineteenth and twentieth centuries. Protestant developments are traced from the Kantian critique to the present and Catholic thought from its response to the French Revolution up to and beyond Vatican II. Prerequisite: One course in Religion or Philosophy. Not offered 1986-87.

Religion 34.306

**Models of God and Man in the Thought of Paul Tillich, Teilhard de Chardin and C.G. Jung**

The course focuses upon a common problematic central to these modern thinkers with backgrounds in theology, science and psychology, namely the nature of God's presence to and activity in nature and life. The course exposes the concerns and pressures operative in their formulation of the question of God and with the similarities and disparities of their responses. Special attention is given to their models of the relationship of divine immanence and transcendence and to the consequent shape of the major Christian symbols within these models. Prerequisite: One of Religion 34.200, 34.265★, 34.280. Not offered 1986-87.

Religion 34.320★

**Selected Problems in Indian Thought**

Topic for 1986-87: *The Concept of the Mother-Goddess in the Hindu Tradition*. A historical approach to the philosophy, mythology, art and practice that are related to the concept of the Great Goddess in the Hindu tradition. Day division, Fall term.

Religion 34.321★

**The Hebrew Prophets**

A study of the major and minor prophetic books of the Hebrew Bible. Emphasis is given to the texts themselves and the various interpretations that historical and literary scholars have proposed. Attention is given to the Ancient

Near Eastern context out of which Israelite prophecy arose. Prerequisite: Religion 34.102★ or permission of the Department. Not offered 1986-87.

Religion 34.323

**Religion and the State, Europe 1815-1965**

Offered in the Department of History as History 24.323.

Religion 34.330

**The Life and Thought of Paul**

Paul's relation to the Old Testament, Rabbinic Judaism, and Hellenism; the mission to the Gentiles; the "mysticism" of Paul; central ideas such as justification by faith, predestination, the Holy Spirit, the Church. Consideration of the situation and message of each of Paul's writings.

Prerequisite: Religion 34.103★ or 34.225 or permission of the Department. Not offered 1986-87.

Religion 34.331★

**Theory and Method in the Study of Religion**

Examination of selected theoretical and methodological models used in the interpretation of religious data. For example, a study of historical, phenomenological, or theological approaches to religious studies. The specific topic may vary from year to year. Prerequisite: Permission of the Department. Evening division, Fall term.

Religion 34.332★

**Studies on Christianity**

Selected problems in the study of the Christian religion. For example, an examination of Christ in recent Christian thought. The specific topic may vary from year to year. Prerequisite: Permission of the Department. Not offered 1986-87.

Religion 34.336★

**Selected Topics in Religion**

*The Geography of Religions*: An inquiry into the reciprocal relations of landscape and religious consciousness and culture. Questions discussed include the use of geographical features as religious symbols (e.g., river, sea, desert, vegetation, mountain); the alteration of landscape by religious communities; the influence of the land in shaping religious worldviews and value systems. Emphasis falls on the impact of mountains on the formation of faith. Day division, Fall term.

Religion 34.338★

**Selected Topics in Early Christian History**

Topic for 1986-87: *The Johannine Community*. A study of the Gospel of John and the Johannine letters and the community that produced them. Day division, Fall term.

Religion 34.342★

**Selected Topics in Islam**

Not offered 1986-87.

Religion 34.355★

**Themes in Judaism and Jewish History**

An examination of a significant theme in Judaism and Jewish history. Each year a different topic is chosen for study, for example, the Jewish response to Hellenism, the Zionist and Reform movements, the Holocaust, or the Establishment of Israel. Not offered 1986-87.

Religion 34.378★

**The Reformation Era in European History, 1409-1648**

Offered in the Department of History as History 24.378★.

Religion 34.390

**Selected Problems in Interpretation**

A course conducted on a tutorial or seminar basis designed to enable advanced students to pursue interests in selected areas of religion.

Prerequisite: Permission of the Department.

Religion 34.484★

**Selected Topics in Comparative Religion**

*State, Society and Religion in the Middle East: A study of state, society and religion in the Middle East from the end of the eighteenth century until the present day. Beginning with the impact of the West on the Middle East, there is an investigation of the ongoing changes in the region. Areas such as the processes of westernization, religious modernization, secularization and the continuing impact of religion on state and society are discussed. (Also offered as Religion 34.511W1.)*

Day division, Fall term.

Religion 34.486★

**Selected Topics in Biblical and Ancient Near Eastern Studies**

*Literary-Structural Studies of the Deuteronomic History: This seminar assumes the unity of Deuteronomy - 2 Kings, and attempts to describe key features of its framework. This involves a literary study using Russian literary critics, such as M. Bakhtin and B. Uspensky, who provide a theoretical basis for this approach. (Also offered as Religion 34.521W1.)*

Day division, Winter term.

Religion 34.488★

**Seminar in Modern Religious Thought and Culture**

*Issues In Methodology And Hermeneutics: An examination of the development of modern hermeneutical theory as it applies to religious studies. The contributions of Gadamer, Ricoeur, and Lonergan among others are explored for their significance. The aim is to define the current state of the discussion. (Also offered as Religion 34.531F1.)*

Evening division, Fall term.

Religion 34.498 (Two Credits)

**Honours Essay**

Open to candidates for Honours in Religion in their Fourth year, with the permission of the Department. The subject for research is settled in consultation with a Departmental Director. A written proposal consisting of title, outline and bibliography must be submitted to and approved by the Honours Essay Proposal Board. The essay will be a substantial piece of work of approximately 16,000 words. The essay is jointly evaluated on its completion by the Departmental Director and one other member of the department. Precludes credit for Religion 34.499. (Consult Departmental Document for further details.)

Religion 34.499

**Honours Essay**

Open to candidates for Combined Honours in Religion in their Fourth year with permission of the Department. The subject for research is settled in consultation with a Departmental Director. A written proposal consisting of title, outline and bibliography must be submitted to and approved by the Honours Essay Proposal Board. The essay will be a substantial piece of work of approximately

10,000 words. The essay is jointly evaluated on its completion by the Departmental Director and one other member of the Department. Precludes credit for Religion 34.498. (Consult Departmental Document for further details.)

■ **Language Courses**

Language courses are intended for students specializing in a particular religious tradition. They are offered according to the availability of members of the Department. Courses taken at the 200 level or above will be mainly independent study under the supervision of a member of the Department. Students interested in taking these courses should consult the Department chair.

Religion 34.115

**Introduction to Hebrew**

An introduction to Hebrew with emphasis on reading comprehension. A study of the prose language of the Hebrew Bible in its basic vocabulary and grammar. Restricted to beginners in the language.

Prerequisite: Permission of the Department.

Religion 34.116

**Introduction to Arabic**

An introduction to modern standard Arabic with emphasis on reading. The course is restricted to beginners.

Prerequisite: Permission of the Department.

Religion 34.117

**Introduction to Sanskrit**

Introduction to the fundamentals of the language with emphasis on reading and writing skills.

Prerequisite: Permission of the Department.

Religion 34.215

**Intermediate Hebrew**

Readings in classical biblical Hebrew with emphasis on the grammatical structure and vocabulary of its prose language.

Prerequisites: The appropriate 100-level language course and permission of the Department.

Religion 34.216

**Intermediate Arabic**

Second-level study of modern standard Arabic grammar and style through readings and exercises.

Prerequisites: The appropriate 100-level language course and permission of the Department.

Religion 34.217

**Readings in Sanskrit Literature**

A study of selected readings from early Hindu literature.

Prerequisites: The appropriate 100-level language course and permission of the Department.

Religion 34.218

**New Testament Greek**

A study of the form and content of prescribed readings from the New Testament in Greek with guidance in translation and exegesis.

Prerequisites: The appropriate 100-level language course and permission of the Department.

Religion 34.392

**Language Tutorial**

An advanced study of a language in which one of the religious traditions has been transmitted.

Prerequisite: Permission of the Department.



## Officers of Instruction

### *Chairman*

A. Lewinson

### *Professor*

G.R. Barratt

### *Associate Professors*

G. Melnikoff

P. Varnai

### *Assistant Professor*

A. Lewinson

### *Instructor*

H. Van de Lagemaat

### *Honours and Majors Supervisor*

A. Lewinson

## The Russian Program

The Department of Russian offers a flexible undergraduate program. It has been designed to satisfy a range of different academic and professional interests. Courses are offered in the areas of Russian literature, Russian languages and linguistics (including an option for translation training), and Soviet period studies. Details of each degree program are listed below. The Department also offers special-interest courses and tutorials in the areas of literature in translation, scientific Russian, applied Russian for international relations, Ukrainian and other Slavic languages, and Hungarian.

The minimum credit requirements for a degree in Russian, after the completion of Russian 36.100 or 36.111, or the equivalent, are as follows: Major, six; Combined Major, five; Honours, nine; Combined Honours, seven.

## Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all departmental regulations and requirements as set out below.

## Major Programs

The minimum requirements for the Major in Russian, after the completion of Russian 36.100 or 36.111, include Russian 36.202 or 36.211, 36.203, 36.260, 36.302 and two additional Russian credits at the 200 level or above. Russian 36.260 should be taken concurrently with 36.202 or 36.211.

The minimum requirements for the Combined Major, after the completion of Russian 36.100 or 36.111, include Russian 36.202 or 36.211, 36.203, 36.260, 36.302 and one additional Russian credit at the 200 level or above. Russian 36.260 should be taken concurrently with 36.202 or 36.211.

## Honours Programs

Students should plan their program in accordance with their interests and their needs and in consultation with the Department.

The minimum requirements for the Honours degree in Russian, after the completion of Russian 36.100 or 36.111, include Russian 36.201★ and 36.301★, 36.202 or 36.211, 36.203, 36.260, 36.302 and four additional credits at the 300 or 400 level, including 36.335 or 36.355 and at least one credit at the 400 level.

The minimum requirements for the Combined Honours degree, after the completion of Russian 36.100 or 36.111, include Russian 36.201★ and 36.301★, 36.202 or 36.211, 36.203, 36.260, 36.302, 36.335 or 36.355 and one additional credit at the 300 or 400 level.

Combined Honours programs are possible with a number of other disciplines, among them History, Political Science, Journalism, English, French, Italian, German, Spanish and Linguistics. The Department also participates in the Comparative Literature program, and in the Institute of Soviet and East European Studies.

## Combined Honours in Russian and Linguistics, Translation Option

A special Combined Honours program is available to students contemplating a career in Russian to English translation. In this program, the following courses are required:

### *Linguistics*

- 29.100 Introduction to Linguistics
- 29.301★ Phonetics
- 29.303★ Language Analysis
- 29.304★ Grammatical Theory
- 29.485 Structures of English
- 29.490 Tutorial in Linguistics. Tutorial consists obligatorily of directed readings in the theory of translation.

### *Russian*

- 36.202 Intermediate Russian, or
- 36.211 Intensive Intermediate Russian
- 36.203 Russian Grammar
- 36.302 Advanced Russian
- 36.303 Russian Translation
- 36.304 Russian Style and Composition
- 36.495★ Tutorial. For students in this program a practicum in translation, with analysis and criticism of selected professional translations.
- 36.499 Honours Essay. For students in this program an annotated translation of a substantial piece of text, with oral defence before a panel consisting of a member of the Russian department, a member of the Linguistics department, and a professional translator.

### *French*

At least a 100-level credit.

At least five of the remaining credits shall be chosen from offerings in the following areas: Mass Communication (27.111 Introduction to Mass Communication), Business (Accounting), Economics, Geography, Political Science, Law, Sociology-Anthropology, Biology, Chemistry, Geology, Physics, Computer Science, French (above the 100 level). Russian literature courses may also be selected.

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## Departmental Tutorial Program

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Students with advanced or specialized interests in Russian and Slavic studies should examine the tutorials offered by the Department in the areas of literary and language study. These tutorials allow individual or small group study of particular interests for which there is a demand. Enquiries should be directed to the Department or to individual faculty members.

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## Special Interest Courses

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1. *Scientific Russian*: The Department offers a special course of reading and translation for students in the natural and social sciences, and engineering, and for others interested in the rapid acquisition of a reading skill in technical Russian. Russian 36.110 is specifically designed to meet the needs of such students. The course may serve as an optional credit for students in any program.

2. *Applied Russian for International Relations*: The Department offers two half-credit courses in Applied Russian for International Relations, 36.120★ and 36.121★, to assist interested students in the acquisition of the linguistic knowledge, terminology and language skills needed for international transactions. In addition to reading, translating and some writing, there is discussion of various documents and of material from the Soviet press. No previous knowledge of Russian is necessary to enrol in Russian 36.120★. Students with some knowledge of Russian may enrol directly in Russian 36.121★ with the permission of the Department.

3. *Russian Literature Courses in English Translation*: The Department offers one full-credit course, Russian 36.260, and two half-credits, Russian 36.360★ and 36.361★, in which Russian literary works are read and studied in English translations. Conducted entirely in English, these courses are designed for all students wishing to broaden their knowledge of Russian literature and culture. The courses offer opportunities for both a comprehensive survey and a detailed examination of Russian authors.

4. *Other Slavic Languages*: The Department also offers additional optional credits in other Slavic languages:

(a) A basic sequence of Ukrainian 36.116 and 36.216 (beginning and advanced);

(b) Bulgarian with an introduction to Macedonian, Old Slavonic, and Serbo-Croat, offered on request if an instructor is available. Hungarian is also offered. See comments, under Slavic and East European Languages (p. 247).

5. *East-European Literature in English Translation*: The Department offers Russian 36.290, Twentieth-Century East-European Literature in English Translation, as a survey of the recent literature of Czechoslovakia, Poland and Hungary. All texts are read in English translation. This course is centred around authors whose concerns extend beyond national boundaries, who are politically and socially revealing, and artistically innovative. The specific Calendar description should be consulted.

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## Laboratory Facilities

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The University's language laboratory provides facilities for drill in aural comprehension. Students may take extra practice in periods in open hours. The language laboratory is used in the following courses: Russian 36.100, 36.111, 36.202, 36.211, Ukrainian 36.116.

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## Departmental Reading Lists

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Departmental reading lists will be available from the Secretary, Room 1301, Arts Tower (telephone 564-2888/89). These reading lists give additional information about courses, including texts, instructors and, as available, the scheduling of courses.

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## Courses Offered

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### Russian 36.100

#### Introductory Russian

Introductory course, the aim of which is to ensure an adequate grasp of the mechanics of the language and basic skills in oral comprehension. Reading of texts. One hour per week devoted exclusively to Russian conversation in class. Oral practice in the language laboratory.

Precludes additional credit for Russian 36.111.

Day division: Four hours a week plus one laboratory period a week.

### Russian 36.110

#### Scientific Russian

This course is designed to meet the needs of all students in the social and natural sciences, and engineering, and of graduate students in any year who require a reading knowledge of Russian scientific or technical literature. It includes the essentials of grammar, a basic vocabulary and the reading of simple texts.

Day division: Three hours a week.

### Russian 36.111

#### Intensive Introductory Russian

An introductory course, the aim of which is to ensure an adequate grasp of the mechanics of the language and basic skills in oral comprehension. Reading and conversation; oral practice in the language laboratory.

Precludes additional credit for Russian 36.100.

Day division, one term: Eight hours a week including laboratory.

### Russian 36.120★

#### Applied Russian for International Relations I

Introduction to the essential linguistic features of Russian as used in material pertaining to international relations, including business and commercial documents, advertising, professional journals, the press, and political documents.

Not offered 1986-87.

### Russian 36.121★

#### Applied Russian for International Relations II

Continuation of Russian 36.120★. The course consists of reading, translation, discussion and writing in Russian of documents, reports and articles. Readings from the Soviet press are studied and insights are obtained into Soviet organizations, Soviet views of Canada, and political and



commercial relations between Canada and the USSR.  
Prerequisite: Russian 36.120★ or an equivalent competence in essentials of Russian.  
Not offered 1986-87.

#### Russian 36.201★

##### **Russian Conversation**

Conversation and discussion of current topics with special emphasis on everyday Russian. Occasional written work.

Prerequisite: Russian 36.100 or 36.111, or permission of the Department.

Day division, Fall term: Three hours a week.

#### Russian 36.202

##### **Intermediate Russian**

Continuation of the basic Russian sequence. Grammar studies, composition, oral drill, reading of selected poetry and prose.

Precludes additional credit for Russian 36.211.

Prerequisite: Russian 36.100 or 36.111, or permission of the Department.

Day division: Four hours a week including laboratory.

#### Russian 36.203

##### **Russian Grammar**

A systematic review of Russian grammar taught in English. Word formation, and morphology, with special emphasis on the most difficult parts of Russian grammar for non-Russians.

Prerequisite: A grade of C or better in Russian 36.100 or 36.111 or permission of the Department.

Day division: Three hours a week.

#### Russian 36.211

##### **Intensive Intermediate Russian**

Continuation of the basic Russian sequence. Grammar studies, composition, oral drill, reading of selected poetry and prose.

Precludes additional credit for Russian 36.202.

Prerequisite: Russian 36.100 or 36.111 or permission of the Department.

Day division, one term: Eight hours a week including laboratory.

#### Russian 36.260

##### **Russian Literature in English Translation — Nineteenth and Twentieth Centuries**

A study of selected works of Russian and Soviet literature in the general context of European literature and against their social and political background. It includes works by Pushkin, Gogol, Turgenev, Leo Tolstoy, Dostoevsky, Chekhov, Gorky, Sholokhov, Pasternak, Solzhenitsyn.

Day division: Two hours a week.

#### Russian 36.290

##### **Twentieth-Century East-European Literature in English Translation**

This course focuses on the literature of three countries: Czechoslovakia, Hungary and Poland. Following an introduction to the pertinent literary traditions, representative twentieth-century works are treated in detail. Post-World War II developments receive further emphasis. All texts are read in English translations. This course does not count as a credit in Russian, but can serve as an Arts option for all students.

Not offered 1986-87.

#### Russian 36.301★

##### **Advanced Russian Conversation**

An advanced sequel to Russian 36.201★.

Prerequisite: Russian 36.201★ or permission of the Department.

Day division, Winter term: Three hours a week.

#### Russian 36.302

##### **Advanced Russian**

Continuation of the basic Russian sequence. Introduction to prose composition and essay writing; further development of comprehension and self-expression in Russian.

Prerequisite: Russian 36.202 or 36.211, or permission of the Department.

Day division: Three hours a week.

#### Russian 36.303

##### **Russian Translation**

A basic course focusing on the principles and practice of translation with extensive exercises using non-literary and literary texts.

Prerequisite: Russian 36.203 or permission of the Department.

Day division: Three hours a week.

#### Russian 36.304

##### **Russian Style and Composition**

Continuation of the basic Russian sequence. Introduction to stylistics and expressive writing. Analysis of semantic and structural peculiarities of modern Russian.

Prerequisite: Russian 36.302 or permission of the Department.

Day division: Two hours a week.

#### Russian 36.335

##### **Major Authors: Pushkin to Chekhov**

A study of selected texts in Russian from major authors of the nineteenth century such as Pushkin, Gogol, Turgenev, Dostoevsky, Tolstoy and Chekhov. Emphasis is placed on the reading of literary texts in a historical context and on the artistic developments in poetry and fiction throughout the period.

Prerequisite: A Russian course at the 300 level or permission of the Department.

Day division: Two hours a week.

#### Russian 36.355

##### **Major Authors: Gorky to Solzhenitsyn**

A study of selected texts in Russian from authors of the twentieth century such as Gorky, Babel, Blok, Mayakovsky, Bulgakov, Zamyatin, Sholokhov and Solzhenitsyn. Emphasis is placed on the reading of literary texts in the context of political and social change and on the study of literary trends, themes and experiments.

Prerequisite: A Russian course at the 300 level or permission of the Department.

Not offered 1986-87.

#### Russian 36.360★

##### **Special Topic: Dostoevsky to Chekhov (in English Translation)**

Study of particular authors, movements or themes, concentrating on the work of Dostoevsky, Tolstoy and Chekhov. The specific course outline may vary from year to year, but it will regularly focus on the relation between imaginative writing and society. All texts are read in English. This course does not count as a credit in Russian but can serve as an Arts option for all students.

Prerequisite: At least Second-year standing or permission of the Department.

Day division, Fall term: Two hours a week.

Russian 36.361★

**Special Topic: The Revolution and After (in English Translation)**

Study of particular authors, movements or themes, concentrating on the period of the Revolution and its aftermath. The specific course outline may vary from year to year, but it will regularly focus on the relation between imaginative writing and society. All texts are read in English. This course does not count as a credit in Russian but can serve as an Arts option for all students. Prerequisite: At least Second-year standing or permission of the Department.

Day division, Winter term: Two hours a week.

Russian 36.399

**Introduction to Methods of Research**

Tutorial on topics of Russian or comparative language and literature, aimed at training in methods of scholarly research and Slavic bibliography.

Not offered 1986-87.

Russian 36.405

**Tutorial: History of the Russian Language**

A tutorial on the historical development of Russian from Old Slavic to the present, based on studies in historical grammar and reading of selected medieval and modern texts.

Prerequisite: Russian 36.203 or permission of the Department.

Not offered 1986-87.

Russian 36.435★

**Tutorial: Special Topic (Literature)**

A tutorial offering advanced study of a literary topic in the area of literary history, criticism or theory, to be arranged in consultation with a member of the Department.

Prerequisite: A Russian course at the 300 level or permission of the Department.

Russian 36.445★

**Tutorial: Special Topic (Drama)**

A tutorial offering concentrated study of a topic related to Russian dramatic literature and theatre, to be arranged in consultation with a member of the Department.

Prerequisite: A Russian course at the 300 level or permission of the Department.

Not offered 1986-87.

Russian 36.455

**Tutorial: Special Topic (Post-1917 Period)**

A tutorial offering study of a topic related to the literature of the Revolution and after, to be arranged in consultation with a member of the Department.

Prerequisite: A Russian course at the 300 level or permission of the Department.

Russian 36.493★

**Translation Tutorial I**

This course is intended for students in the Institute of Soviet and East European Studies, although other students may enrol with the permission of the Department. It offers work in translation to and from Russian, and the objectives of the course are co-ordinated with the specific needs of students in the Institute.

Prerequisite: a 300-level Russian language course or equivalent or permission of the Department.

Russian 36.494★

**Translation Tutorial II**

A continuation of Russian 36.493★.

Prerequisite: Russian 36.493★ or permission of the Department.

Russian 36.495★

**Tutorial: Special Topic (Language)**

A tutorial on topics of language or linguistics, providing individual or small group study. For students in the Translation Option, it will be a practicum in translation with analysis and criticism of selected professional translations.

Prerequisite: Russian 36.302 or 36.303 or permission of the Department.

Russian 36.496★

**Tutorial: Special Subject**

A tutorial on a selected literary or language topic, providing individual or small group study.

Prerequisite: Russian 36.495★ or permission of the Department.

Russian 36.499

**Honours Research Project**

A course for independent research and writing under the supervision of a member of the Department, open to students in the Fourth year of Honours. The written assignment for the course is a substantial piece of work of approximately 8,000 words. It is graded by the supervisor in consultation with a second reader. A written statement, outlining the project and approved by the supervisor, must be submitted to the Chairman of the Department by the last day for course changes. For students in the Translation Option the project consists of an annotated translation of a substantial piece of text, with an oral defence before a board consisting of a member of the Department of Russian, a member of the Department of Linguistics and a professional translator.

■ **Ukrainian**

Ukrainian 36.116

**Introductory Ukrainian**

An introductory course designed to give students the fundamentals of written and spoken Ukrainian. Grammar, reading and oral practice. Language laboratory. This course does not count as a credit in Russian, but can serve as an Arts option for all students.

Day division: Three hours a week and laboratory session.

Ukrainian 36.216

**Advanced Ukrainian**

Grammar review, composition, advanced conversation. Reading of selected prose and poetry representing the most typical features of Ukrainian culture in the nineteenth and twentieth centuries. This course does not count as a credit in Russian, but can serve as an Arts option for all students.

Prerequisite: Ukrainian 36.116 or permission of the Department.

Evening division: Two hours a week.

■ **Slavic and East-European Languages**

Slavic 36.390

**Slavic Language Tutorial**

A study in a Slavic language, other than Russian, which may be useful for research information or translation activities at the graduate or undergraduate level. It includes written and oral exercises in class, as well as translation and reading assignments. Students wishing to study Ukrainian beyond the Ukrainian 36.216 level may enrol in this tutorial. The choice of the language



depends on the availability of an instructor. This course does not count as a credit in Russian, but can serve as an Arts option for all students.

Prerequisite: Permission of the Department.

Day division: Two hours a week.

Slavic 36.391

### **Hungarian Language Tutorial**

This course is offered at the introductory or the advanced level, for both graduate or undergraduate students. It includes written and oral exercises in class, as well as translation and reading assignments. It does not count as a credit in Russian, but can serve as an Arts option for all students.

Prerequisite: Permission of the Department.

Day division: Two hours a week.

### *Note:*

Students interested in Slavic literatures should note the entry for Russian 36.290, Twentieth-Century East-European Literature in English Translation.

# Department of Sociology and Anthropology

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## Officers of Instruction

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*Chairman*  
John Harp

*Assistant Chairman*  
Jacques Chevalier

*Co-ordinator of Graduate Program*  
Stephen Richer

*Co-ordinator of Honours Anthropology Program*  
J. Iain Prattis

*Co-ordinator of Honours Sociology Program*  
June S. Corman

*Co-ordinator of Interdisciplinary Major Program*  
Caryl Steffens

*Professor Emeritus*  
Frank G. Vallee

*Professors*  
Monica Boyd  
Wallace Clement  
John de Vries  
Dennis P. Forcese  
Muni Frumhartz  
John Harp  
Gordon Irving  
Charles D. Laughlin  
Judah Matras  
Bruce A. McFarlane  
John Myles  
Gertrud Neuwirth  
Terrance A. Nosanchuk  
Adam Podgorecki  
J. Iain Prattis  
Stephen Richer  
Ian R. Taylor  
Victor F. Valentine  
Donald Whyte

*Associate Professors*  
Florence K. Andrews  
Valda J. Blundell  
Hyman Burshtyn  
Jacques Chevalier  
John J. Cove  
Bruce A. Cox  
Charles C. Gordon (*Joint Appointment, School of Architecture*)  
Ken Hatt  
Jared T. Keil  
Joseph Manyoni  
Dennis Olsen  
Derek G. Smith  
Allan D. Steeves

*Assistant Professors*  
June S. Corman  
Colin Farmer  
Barclay D. Johnson  
Birthe Jorgensen  
Daiva K. Stasiulis  
Caryl Steffens

## Adjunct Professors

Alexander Himelfarb, *Ministry of the Solicitor General*  
George F. MacDonald, *National Museum of Man*  
Hugh A. McRoberts, *Office of the Auditor General*  
Heather Menzies, *Author*  
William R. Outerbridge, *National Parole Board*  
Leonard Rutman, *Price Waterhouse Associates*  
T. John Samuel, *Employment and Immigration Canada*

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## General Information

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The Department of Sociology and Anthropology offers the following undergraduate programs:

Major in Sociology-Anthropology  
Honours in Anthropology  
Honours in Sociology

All of these programs can be taken either as principal concentrations or in combination with other disciplines. Details of these programs are outlined below.

The several types of courses offered by the Department are indicated by the following numerical prefixes:

- 53 Sociology
- 54 Anthropology
- 56 Sociology-Anthropology

*Provided they meet the requirements of the particular program for which they are registered, students may select their courses from any or all of these.*

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## Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all departmental regulations and requirements as set out below.

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## Major Programs

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### Major Program

1. Students in the Major program must successfully complete six credits in the sociology-anthropology field:  
(a) one of Sociology 53.100, Anthropology 54.100 or Sociology-Anthropology 56.100 (see *Note* below);  
(b) Sociology-Anthropology 56.200★;  
(c) *either* Sociology 53.201★ *or* Anthropology 54.201★;  
(d) one chosen from: Sociology-Anthropology 56.305, Sociology 53.306, Anthropology 54.310;  
(e) one further credit in Sociology and/or Anthropology at the 300 level;  
(f) two additional credits in Sociology and/or Anthropology.
2. Students may not count more than *nine* credits in Sociology and/or Anthropology toward a Major B.A. degree.
3. Final-year students with the required standing may be given permission to take a course at the Fourth-year level. It is also expected that some work will be taken in related disciplines in the Social Sciences.
4. Students are expected to maintain a minimum average of C- in the Major program.
5. A total of 15 credits beyond Qualifying University year is required.



The entire selection of courses should be worked out in consultation with the undergraduate Co-ordinator of Majors. Students are strongly advised to consult this Co-ordinator regularly throughout their degree studies to ensure that they are observing departmental and University requirements.

**Note:**

A student may take both Sociology 53.100 and Anthropology 54.100 but only *one* may be counted toward the Major degree. If Sociology-Anthropology 56.100 has been taken, Sociology 53.100 or Anthropology 54.100 may not be taken.

### Combined Major Programs

1. Students combining Sociology-Anthropology with another discipline must successfully complete *four* credits in Sociology and/or Anthropology:

- (a) one of Sociology 53.100, Anthropology 54.100, or Sociology-Anthropology 56.100 (see *Note* below);
- (b) *either* Sociology-Anthropology 56.200★ and Sociology 53.201★; or Sociology-Anthropology 56.200★ and Anthropology 54.201★; or one course chosen from: Sociology-Anthropology 56.305, Sociology 53.306, Anthropology 54.310;
- (c) one further credit in Sociology and/or Anthropology at the 300 level;
- (d) one additional credit in Sociology and/or Anthropology.

2. Students may not count more than *seven* credits in Sociology and/or Anthropology toward a B.A. Combined Major degree.

3. Final-year students with the required standing may be given permission to take a course at the Fourth-year level.

4. Students are expected to maintain a minimum average of C- in each Major field.

5. A total of 15 credits beyond Qualifying University year is required.

Combined Major programs should be worked out in consultation with the departments concerned, and may include other requirements additional to those listed above.

**Note:**

A student may take both Sociology 53.100 and Anthropology 54.100 but only *one* may be counted toward the Major degree. If Sociology-Anthropology 56.100 has been taken, Sociology 53.100 or Anthropology 54.100 may not be taken.

### Honours Programs

#### General

Honours programs may be entered from the Honours First year in the Social Sciences (see p. 00) or by transfer from the Major program if the appropriate standing has been attained (C+). Students taking Honours in Sociology or Anthropology are expected to meet the general University regulations governing the degree and to fulfil certain additional requirements depending on the program selected. The practicum or the essay will be considered as a credit in determining a student's final standing. The following programs are available.

#### Sociology

The entire selection of courses is to be worked out in close consultation with the Co-ordinator of Honours (Sociology) or members of the Honours Program Committee (Sociology). The requirements are:

1. *Nine* credits in Sociology and/or Anthropology:
  - (a) one of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100;
  - (b) Sociology-Anthropology 56.200★ and *either* Sociology 53.201★ or Anthropology 54.201★;
  - (c) Sociology-Anthropology 56.305 and Sociology 53.306 (one of which should be taken in the Second year);
  - (d) Sociology 53.370;
  - (e) two half-credit seminars or one full-credit seminar at the 400 or 500 level;
  - (f) Sociology 53.495 (Honours Practicum) or 53.498 (Honours Essay);
  - (g) two additional credits within the Department.

2. A Minor consisting of three credits in one of the following: Economics, Geography, History, Philosophy, Political Science or Psychology. Alternative Minors will also be considered.

3. A maximum of 12 credits in Sociology and/or Anthropology may be counted toward the degree of B.A. with Honours in Sociology.

4. A total of 20 credits beyond Qualifying University year is required.

It is recommended that students take a course (or courses) involving formal reasoning during their first two years. This may be selected from among Mathematics 69.107★ or 69.117★ or Philosophy 32.201★.

Students are strongly advised to consult the Undergraduate Co-ordinator regularly throughout their degree studies to ensure that they are observing departmental and University requirements.

#### Anthropology

The entire selection of courses is to be worked out in close consultation with the Co-ordinator of Honours (Anthropology) or members of the Honours Program Committee (Anthropology). The requirements are:

1. *Nine* credits in Anthropology and/or Sociology:
  - (a) one of Anthropology 54.100, Sociology 53.100, or Sociology-Anthropology 56.100;
  - (b) Sociology-Anthropology 56.200★ and *either* Anthropology 54.201★ or Sociology 53.201★;
  - (c) Anthropology 54.310, 54.410 and 54.495;
  - (d) two additional half-credit seminars or one full-credit seminar at the 400 or 500 level;
  - (e) three additional credits within the Department.

2. A maximum of 12 credits in Anthropology and/or Sociology may be counted toward the degree of B.A. with Honours in Anthropology.

3. A total of 20 credits beyond Qualifying University year is required.

Students are strongly advised to consult the Undergraduate Co-ordinator regularly throughout their degree studies to ensure that they are observing departmental and University requirements.

### Combined Honours in Sociology

The entire selection of courses is to be worked out in close consultation with the Co-ordinator of Honours (Sociology) or members of the Honours Program Committee (Sociology), as well as with the equivalent person(s) in the other discipline.

Students are strongly advised to consult the Undergraduate Co-ordinator regularly throughout their degree studies to ensure that they are observing departmental and University requirements.

The general requirements for Combined Honours in Sociology are:

1. In the First year, one of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100;
2. In the Second year, Sociology-Anthropology 56.200★ and Sociology 53.201★ (or Anthropology 54.201★);
3. In the Second or Third year, Sociology 53.306 or Sociology-Anthropology 56.305 (if the Honours Essay is written in Sociology, 53.306 is recommended);
4. In the Third or Fourth year, Sociology 53.370;
5. In the Fourth year, one full or two half credits in Sociology and/or Anthropology at the 400 or 500 level; Sociology 53.495 or Sociology 53.498; normally, Honours students will be expected to undertake an Honours Essay in one of the disciplines; in those cases where the second discipline does not require an Honours Essay, alternative arrangements may be considered by the Co-ordinator of Honours (Sociology);
6. One additional credit in the Department of Sociology and Anthropology at the 200 level or above, if the Honours Essay is written in Sociology; two additional credits in Sociology/Anthropology at the 200 level or above if the Honours Essay is written in the other discipline;
7. A maximum of *nine* credits in Sociology and/or Anthropology may be counted toward the degree of B.A. with Combined Honours in Sociology and another discipline.

It is recommended that students take a course (or courses) involving formal reasoning during their first two years. This may be selected from among Mathematics 69.107★ or 69.117★, or Philosophy 32.201★.

Combined Honours with a considerable number of disciplines is possible, and will be worked out upon request. The following programs have been established:

#### Combined Honours in Sociology and Political Science

Required courses in Sociology and/or Anthropology include:

1. Sociology 53.100 or Anthropology 54.100 or Sociology-Anthropology 56.100;
2. One of the following methods sequences:  
(a) in the Second year, Political Science 47.270; in the Third year, Sociology 53.370; or  
(b) in the Second year, Sociology-Anthropology 56.200★ plus one of Sociology 53.201★ or Anthropology 54.201★; in the Third year, Political Science 47.471★ and 47.472★ (students should note that Political Science 47.471★ and 47.472★ may not be offered every year);
3. Sociology-Anthropology 56.305 or Sociology 53.306 (if the Honours Essay is written in Sociology, 53.306 is recommended);

4. If the Honours Essay is written in Sociology: Sociology 53.495 or 53.498, and two additional credits in Sociology and/or Anthropology, one of which must be taken at the 400 or 500 level; if the Honours Essay is written in Political Science: three additional credits in Sociology and/or Anthropology, one of which must be taken at the 400 or 500 level.

A maximum of *nine* credits in Sociology and/or Anthropology may be counted toward the degree of B.A. with Combined Honours in Political Science and Sociology.

*Note:*

See also p. 219, and consult the Department of Political Science.

#### Combined Honours in Sociology and Economics

Required courses in Sociology and/or Anthropology include:

1. One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100;
2. Sociology-Anthropology 56.200★ and *either* Sociology 53.201★ or Anthropology 54.201★, followed by Sociology 53.370 or Economics 43.220;
3. Sociology-Anthropology 56.305 or Sociology 53.306 (if the Honours Essay is written in Sociology, 53.306 is recommended);
4. If the Honours Essay is written in Sociology: Sociology 53.495 or 53.498; and two additional credits in Sociology and/or Anthropology, one of which must be at the 400 or 500 level; otherwise, three additional credits in Sociology and/or Anthropology are required, one of which must be at the 400 or 500 level.

A maximum of *nine* credits in Sociology and/or Anthropology may be counted toward the degree of B.A. with Combined Honours in Economics and Sociology.

*Note:*

See also pp. 124-125 and consult the Department of Economics.

#### Combined Honours in Sociology and Journalism

Students may select a course pattern that will lead, at their option, to either the degree of B.A. with Combined Honours in Journalism and Sociology, or B.J. (with Sociology). At the end of the Third year, students will elect to write their Honours Essay in either Sociology or Journalism. Should students select Sociology, they will be awarded the degree of B.A. upon graduation. Students selecting Journalism will be awarded the degree of B.J. (with Sociology) upon graduation.

The Combined Honours program in Sociology and Journalism requires a total of 21 credits. The required courses in the Sociology and/or Anthropology component of this program are:

1. One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100;
2. Sociology-Anthropology 56.200★; *either* Sociology 53.201★ or Anthropology 54.201★; Sociology 53.370;
3. Sociology-Anthropology 56.305 or Sociology 53.306 (if the Honours Essay is written in Sociology, 53.306 is recommended);
4. If the Honours Essay is written in Sociology: Sociology 53.495 or 53.498; and two additional credits in Sociology and/or Anthropology (not including Sociology-Anthropology 56.211), one of which must be at the 400 or 500 level; if the Honours Essay is written in Journalism,



three additional credits in Sociology and/or Anthropology (not including Sociology-Anthropology 56.211), one of which must be at the 400 or 500 level.

A maximum of *nine* credits in Sociology and/or Anthropology may be counted toward the degrees of B.A. with Combined Honours in Journalism and Sociology or B.J. (with Sociology).

*Note:*

See also p. 180-181, and consult the School of Journalism.

### **Combined Honours in Sociology and Law**

The required courses in the Sociology and/or Anthropology component of this program are:

1. One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100;
2. Sociology-Anthropology 56.200★ and Sociology 53.201★ (or Anthropology 54.201★), and Sociology 53.370;
3. Sociology-Anthropology 56.305 or Sociology 53.306 (if the Honours Essay is written in Sociology, Sociology 53.306 is recommended);
4. If the Honours Essay is written in Sociology: Sociology 53.495 or 53.498; and two additional credits in Sociology and/or Anthropology, one of which must be at the 400 or 500 level; if the Honours Essay is written in Law, students should take three additional credits in Sociology and/or Anthropology, one of which must be at the 400 or 500 level.

A maximum of *nine* credits in Sociology and/or Anthropology may be counted toward the degree of B.A. with Combined Honours in Law and Sociology.

*Notes:*

(a) These requirements are in effect for all students who entered this program on or after September 1, 1983. Students who entered the program before this date must fulfil the requirements set forth in the 1982-83 and previous calendars.

(b) See also p. 187, and consult the Department of Law.

### **Combined Honours in Sociology and Psychology**

Required courses in Sociology and/or Anthropology include:

1. Sociology 53.100 or Anthropology 54.100 or Sociology-Anthropology 56.100;
2. Sociology-Anthropology 56.200★, and *either* Sociology 53.201★ or Anthropology 54.201★;
3. Sociology-Anthropology 56.305 or Sociology 53.306 (if the Honours Essay is written in Sociology, 53.306 is recommended);
4. If the Honours Essay is written in Sociology: Sociology 53.370; 53.495 or 53.498; and two additional credits in Sociology and/or Anthropology, one of which must be taken at the 400 or 500 level; if the Honours Essay is written in Psychology: Psychology 49.498 and 49.300; and four additional credits in Sociology and/or Anthropology, one of which must be taken at the 400 or 500 level.

A maximum of *nine* credits in Sociology and/or Anthropology may be counted toward the degree of B.A. with Combined Honours in Psychology and Sociology.

*Note:*

See also p. 000, and consult the Department of Psychology.

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### **Combined Honours in Anthropology**

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Students intending to enter an Honours program combining Anthropology with another discipline should take one of Anthropology 54.100, Sociology 53.100, Sociology-Anthropology 56.100 and the introductory course in the other discipline in their First year. A minimum of *six* credits in Anthropology and/or Sociology is required, but not more than *nine* credits in Anthropology and/or Sociology may be counted toward the degree of B.A. with Combined Honours in Anthropology and another discipline.

The entire selection of courses is to be worked out in close consultation with the Co-ordinator of Honours (Anthropology) or members of the Honours Program Committee (Anthropology) as well as the equivalent person(s) in the other discipline.

Combined Honours with a considerable number of other disciplines is possible and will be worked out upon request.

The general requirements for Combined Honours in Anthropology are:

1. One of Anthropology 54.100, Sociology 53.100, or Sociology-Anthropology 56.100;
2. Sociology-Anthropology 56.200★ and *either* Anthropology 54.201★ or Sociology 53.201★;
3. Anthropology 54.310;
4. Where the Honours Practicum is taken in Anthropology, Anthropology 54.410 and 54.495 plus one additional credit in Anthropology and/or Sociology at the 400 or 500 level;
5. Where the Honours Essay is written in another discipline, three additional credits in Anthropology and/or Sociology, one of them at the 400 or 500 level.

Normally, Honours students will be expected to undertake an Honours Essay in one of the disciplines. In those cases where the second discipline does not require an Honours Essay, alternative arrangements may be considered by the Co-ordinator of Honours (Anthropology).

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### **Criminology and Criminal Justice Concentration**

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For details see p. 119.

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### **Graduate Program**

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The Department offers studies leading to the following graduate degrees: M.A. in Sociology, M.A. in Social Anthropology and Ph.D. in Sociology. For further details consult the Graduate Studies and Research Calendar. Final-year Honours students may take one or more graduate seminars with the permission of the Department.

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### **Prerequisite**

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The normal prerequisite for courses taken beyond the 100 level is one of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100. An introductory course in Sociology or Anthropology taken at Carleton University prior to 1972-73, or at another university, will ordinarily satisfy the prerequisite requirement. Other

students may be admitted with permission of the Department.

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### Course-Related Tutorials

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Students within the Department may include among their courses one or more tutorials. Further information is available from the office of the Chairman.

Written permission from the Chairman of the Department of Sociology and Anthropology is necessary before registration in these courses can take place.

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### Courses Offered

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#### Notes:

(a) The following is a complete list of all Sociology and Anthropology undergraduate courses offered by the Department. Please note that not all courses are offered every year. Students should consult the University and departmental timetables published in early July for a list of courses offered in 1986-87 and their scheduling.

(b) ★ denotes a half-credit course.

#### Sociology 53.100

##### Introduction to Sociology

An introduction to the comparative study of social groups, classes and institutions. The main emphasis is on industrialized societies with special attention given to Canadian society.

Precludes additional credit for Sociology-Anthropology 56.100 or Anthropology 54.100.

Day and Evening divisions: Lectures and discussion three hours a week.

#### Anthropology 54.100

##### Introduction to Anthropology

Anthropology is the study of the alternative ways that humans perceive, believe and behave. The course considers the nature and evolution of human cultural systems and forms of adaptation ranging from hunting and gathering to farming and stratified state formations. Attention is given to such varying institutions as marriage and the family, economics, politics and religion. Both the adaptive and potentially maladaptive aspects of human behaviour are examined.

Precludes additional credit for Sociology-Anthropology 56.100 or Sociology 53.100.

Day and Evening divisions: Lectures and discussion three hours a week.

#### Sociology-Anthropology 56.100

##### Principles of Comparative Social Structure: Sociology and Anthropology

An introduction to the comparative study of human society from the parallel perspective of sociology and social anthropology. The principal focus is on continuity and change in the development of relatively simple and highly complex societies.

Precludes additional credit for Sociology 53.100 or Anthropology 54.100.

Lectures and discussion three hours a week.

#### Sociology-Anthropology 56.200★

##### Fundamentals of Social Research

An introduction to general issues in social research. Topics include the logic of research, problems of research design, fundamental techniques of data collection in

sociology and anthropology, and problems in the ethics of research.

Precludes additional credit for Sociology-Anthropology 56.200 taken prior to 1978-79.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100.

Day and Evening divisions, Fall term: Lectures and workshop three hours a week.

#### Sociology 53.201★

##### Introduction to Sociological Research

The study of qualitative and quantitative methods of data collection. Various techniques of data analysis are discussed.

Precludes additional credit for Sociology-Anthropology 56.200 taken prior to 1978-79.

Prerequisite: Sociology-Anthropology 56.200★.

Day and Evening divisions, Winter term: Lectures and workshop three hours a week.

#### Anthropology 54.201★

##### Introduction to Anthropological Research

This course examines the research procedures which form the core of anthropological field research as applied to studies of small-scale, non-industrial or non-western societies, as well as to sub-cultures of urban communities and industrialized societies. It focuses on the design of a research project and the "real life" situations that confront every anthropologist in the field. Selected field monographs are critically discussed to illustrate these procedures.

Prerequisite: Sociology-Anthropology 56.200★.

Winter term: Lectures and workshop three hours a week.

#### Anthropology 54.206★

##### Cultural Adaptations and the Environment

This course examines the ways in which humans affect and are affected by the natural environment. The focus is upon simpler, non-industrial societies whose modes of subsistence are based upon hunting and gathering, horticulture, or pastoralism. Basic concepts and theories of anthropological ecology are introduced.

Precludes additional credit for Anthropology 54.206★ taken prior to 1980.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

#### Anthropology 54.207★

##### The Anthropology of Conquest

What is the fate of a small-scale or non-western society in a situation of partial or pervasive contact with colonial or industrial nation-states? Is it one of mutual adjustment and exchange or one of devastating disruption? This course examines these and other closely related issues with examples drawn from Canadian history and other parts of the world. Specific topics include forced labour and mechanisms of resource appropriation, acculturation and ethnocentrism, wars of extermination and the demographic effects of contact, treaty-making and land policies, revitalization movements and other aboriginal responses to conquest.

Precludes additional credit for Anthropology 54.207★ taken prior to 1980.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.



## Sociology 53.210

**Social Psychology**

The study of the relationship between the individual and the social system. Emphasis is on integrating individual and social approaches. How does a group influence psychological processes (attitudes, cognitions, motivations, etc.)? How does an individual influence a group? Group processes such as socialization, symbolic interaction, coercion, conformity, leadership, cohesion, etc., are studied.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, introductory Psychology, or permission of the Department.

Lectures and discussion three hours a week.

## Sociology-Anthropology 56.211

**The Mass Media in Modern Society**

An examination of the historical development and current operations of the major mass media, with a view to relating developments to the larger social structure. Emphasis is on the relationship between the media and the structure of Canadian society. (Also listed as Mass Communication 27.211.)

Prerequisites: For Major and Honours students in Sociology/Anthropology. One of Mass Communication 27.111, Sociology 53.100, Anthropology 54.100 or Sociology-Anthropology 56.100.

Lectures and discussion three hours a week.

## Anthropology 54.219★

**North American Native Peoples**

An anthropological examination of issues concerning Canadian Indian, Inuit, and Metis societies. The course explores controversies surrounding social change, native rights, government policy, cultural autonomy and women's status.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

## Sociology-Anthropology 56.220

**Canadian Society**

The course focuses on the study of Canadian society as an ongoing social system. Alternative theoretical perspectives are developed and examined for the interpretation they provide of recurrent social issues. Special attention is given to persistence and change in regional, ethnic, class and sex-role differences.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

## Anthropology 54.225

**Prehistoric Anthropology, Cultural and Biological Evolution of Humans**

An examination, from an evolutionary point of view, of the physical anthropology and archaeology of early humans, their origins, the development of technology and of complex institutions, and the nature of racial differences.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures two hours a week and workshop one hour a week.

## Anthropology 54.230

**Social Systems of Non-Western Societies**

A study of social anthropology with an emphasis on cross-cultural comparisons of various societies. The course focuses on current directions and debates in the study of kinship, political, economic and symbolic systems, culture change and other areas of anthropological concern.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

## Sociology-Anthropology 56.235

**Ethnic Group Relations**

An anthropological and sociological study of minority groups and of ethnic and "race" relations in multi-cultural societies. The course focuses on intergroup processes within a comparative framework.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

## Sociology-Anthropology 56.241

**Kinship, Marriage and the Family**

The primary focus of this course is upon contemporary marriage and family life with a major emphasis on the family in Canadian society. The background for this study is developed through the consideration of historical and cross-cultural perspectives on kinship and family forms. Consideration is given to current issues, including changes in marriage and parenthood and associated policy changes.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

## Sociology-Anthropology 56.243

**Religion and Society**

A broad survey of religious institutions, with comparative and historical emphases. Examination is made of the major social, cultural and psychological theories of religion, as well as of the methodological problems associated with the subject matter. Attention is also placed on a range of topics such as totemism, social change, utopian communities, secularization, and the relationship of religion to other social institutions and processes.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

## Sociology 53.245

**The Sociology of Work: Occupations and Professions**

A study of the sociological aspects of work, with particular emphasis on the historical development and contemporary organization of occupations and professions, career patterns and recruitment, and manpower problems in developed and developing countries.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

## Sociology 53.247

**Women in Society**

An enquiry into the historical and contemporary roots of sex-role determination. A comparative analysis of the position of women in various social formations is



attempted, in conjunction with an examination of various theoretical perspectives concerning women's societal role. Emphasis is on the Canadian context.

**Prerequisite:** One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

**Anthropology 54.248★**

**The Anthropology of Women**

An examination of male and female roles and status in relation to societal factors such as economics, decision-making, and ideology. Emphasis is on the study of women in traditional, and changing, non-western pre-industrial societies.

**Prerequisite:** One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

**Sociology 53.251★**

**Introduction to Population Studies**

An introduction to the basic principles of demography. Past and present population growth, and the determinants of population growth, are examined. Interrelations among demographic, social, cultural and economic factors are investigated. Where possible, Canadian demographic material is discussed.

**Prerequisite:** One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

**Sociology 53.252★**

**Sociology of Aging and the Elderly**

An investigation of the implications of population aging for Canadian social structure and the major issues, theories and research regarding aging and the elderly in contemporary society. The implications of Canada's changing age structure for such institutions as the economy, the polity and the family are examined in a comparative perspective. Social policy issues related to aspects of the aging process such as retirement and pensions are discussed. Special attention is given to a detailed examination of the composition and living conditions of Canada's elderly.

**Prerequisite:** One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

**Sociology-Anthropology 56.253★**

**Introduction to Human Ecology**

The course focuses on interrelationships among population, organization, environment and technology, and on the relationship between man and the natural environment from the perspective of resource use, management and policy. (When this course is given in more than one section, the sections are likely to differ in the disciplinary approach that is emphasized.)

**Prerequisite:** One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

**Sociology 53.254★**

**Urban Sociology**

An examination of issues related to man and the urban environment, including the historical process of urbanization, the rural-urban transition, and the diffusion of urban values and life styles. Some attention is paid to

contemporary urban problems, such as urban renewal, pollution and the pressures of the urban environment on social institutions.

**Prerequisite:** One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

**Sociology 53.255★**

**Sociology of Deviance**

An analysis of the relation of deviant behaviour to the functioning of social systems: conditions and types of deviance from the institutional order, the evasion of rules, the social roles of deviants, the structure of control, punishment and cure.

**Prerequisite:** One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

**Sociology 53.256★**

**Police in Society**

An examination of the organization and activities of the police in industrialized societies. Particular attention is devoted to Canadian information, and the themes of social control, police discretion, and the relations of police to a democratic society.

**Prerequisite:** One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100, or permission of the Department.

Lectures and discussion three hours a week.

**Sociology 53.260★**

**Community**

The community is studied as a localized social system in a larger social setting. This involves analysis of demographic and ecological factors as well as a variety of community-based institutions. Special attention is given to decision-making, community planning and development.

**Prerequisite:** One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

**Sociology 53.270**

**Criminology**

The study of criminal behaviour in modern society with special emphasis on interdisciplinary theories of causation, the relationship of crime and the social structure, and policies and programs by which society reacts to crime.

**Prerequisite:** One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

**Sociology-Anthropology 56.285★**

**Selected Topics**

Selected topics in sociology and/or anthropology, not ordinarily treated in the regular course program. The choice of topics varies from year to year.

**Sociology-Anthropology 56.286★**

**Selected Topics**

Selected topics in sociology and/or anthropology, not ordinarily treated in the regular course program. The choice of topics varies from year to year.



Sociology-Anthropology 56.291★ and 56.292★

**Course-Related Tutorials**

See explanatory note on p. 252.

Anthropology 54.301★

**Phonetics**

Offered in the Department of Linguistics as Linguistics 29.301★.

Anthropology 54.302★

**Phonology**

Offered in the Department of Linguistics as Linguistics 29.302★.

Anthropology 54.303★

**Language Analysis**

Offered in the Department of Linguistics as Linguistics 29.303★.

Anthropology 54.304★

**Grammatical Theory**

Offered in the Department of Linguistics as Linguistics 29.304★.

Sociology-Anthropology 56.305

**The Development of Sociological and Anthropological Thought**

The development of sociological and anthropological thought since the end of the eighteenth century. Various theoretical approaches are placed within their historical, social and intellectual contexts. The writings of key figures such as Comte, Spencer, Marx, Durkheim, Weber, Malinowski and Radcliffe-Brown are examined and analyzed as illustrations of the development of theoretical approaches in both disciplines.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology 53.306

**Contemporary Theoretical Sociology**

The course discusses contemporary theoretical perspectives such as symbolic interactionism, phenomenological sociology, ethnomethodology, structural Marxism, and critical theory. In discussing the theories, the lectures focus on current debates concerning the scientific status of sociology, the problem of values, of human agency, intersubjectivity and structure.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Anthropology 54.310

**Theory and Methodology in Anthropology**

A consideration of the nature of anthropological theory and of explanation in the anthropological context. Some attention is devoted to previous formulations relevant to contemporary anthropology, but the emphasis is on the contemporary formulation of cultural ecology, ecological determinism, evolutionism and structural-functionalism. Special attention is given to the interdependence of theory and methods of research.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology-Anthropology 56.311

**Advanced Study of the Mass Media**

An examination of the philosophical and theoretical foundations of mass-communication studies. The course is an analysis of the content of selected theories with a view to assessing the contributions they make to the understanding of mass communication. (Also listed as Mass Communication 27.311.)

Prerequisites: For Major and Honours students in Sociology/Anthropology. Mass Communication 27.211 or Sociology 56.211.

Lectures and discussion three hours a week.

Sociology 53.315

**Sociology of Education**

An examination of educational institutions; their interplay with one another and with other social institutions; the structure of educational opportunity; the school and university seen as organizations; individual and social effects of education; the sociology of learning. The approach is generally comparative and includes a consideration of contemporary critiques of the educational system.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Anthropology 54.317★

**Visual Anthropology**

This course examines the anthropological experience as reflected in film. A number of methodological problems are considered, including selectivity, bias, the effect of the observer's presence, problems in reconstructing past events in film and of using photographs and photo archives in research.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Anthropology 54.318★

**The Prehistory of New World Native Peoples**

An examination of the prehistory of the New World, with particular emphasis upon North America. Topics covered include the peopling of the New World, the origins of agriculture and civilization in this area, and the regional prehistories of native peoples. Special attention is given to the prehistoric roots of contemporary Indian and Inuit societies.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology-Anthropology 56.320

**French Canada and Quebec Society**

An analysis of the economic, cultural and political aspects of present-day French Canada and Quebec society, with special reference to the interplay of three fundamental themes, i.e., class, culture and nation. Particular attention is also given to the diversity of theoretical perspectives and modes of analysis which prevail in the study of the contemporary situation. A reading knowledge of French is helpful, but is not a prerequisite for the course.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.



**Sociology-Anthropology 56.325★**

**Selected Topics in Sociology-Anthropology**

Selected topics in sociology and/or anthropology, not ordinarily treated in the regular course program. The choice of topics varies from year to year.

**Sociology-Anthropology 56.326★**

**Selected Topics in Sociology-Anthropology**

Selected topics in sociology and/or anthropology, not ordinarily treated in the regular course program. The choice of topics varies from year to year.

**Anthropology 54.331★**

**Kinship and Culture**

This course examines the nature of peoples' ideas concerning procreation, incest, and social relationships, and variations in descent, marriage, families, and kinship terminologies cross-culturally. The course also relates aspects of kinship to other societal institutions and ideologies.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

**Anthropology 54.333★**

**Economic Anthropology**

The course is concerned with the culturally varying systems of material production, the unequal distribution of wealth and the effects that decision strategies have on social relations and change in non-industrial societies. Attention is given to fundamental controversies dividing scholars of divergent theoretical affiliations — functionalists, Marxists, and so on — with a particular emphasis on related issues of Third World or hinterland underdevelopment. Concrete case studies of gift exchange, conspicuous consumption, slavery, kin-based economies, etc., are examined in a variety of geographical and historical contexts.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

**Anthropology 54.334★**

**Culture and Symbols**

The ability to create and manipulate symbols and concrete images ranging from colours to sounds and from animals and plants to deities is a defining characteristic of cultural reality. Different anthropological methods are employed to examine symbols in all parts of the world and in a variety of social contexts, such as magical and religious rituals, mythology, folklore, art, primitive classification, kinship and politics. The focus is on how human beings understand themselves through symbols and on alternative approaches to symbolic studies.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

**Anthropology 54.335★**

**The Prehistory of Human Settlement**

This course examines the way in which human societies with different ways of life utilize space. Archaeological data are used to compare and contrast the settlement forms of hunting and gathering peoples with those of more settled village and urban dwellers. This course considers in detail the emergence in both the Old and New Worlds of settled life and the resulting changes in human-environment relations.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

**Sociology 53.339★**

**Society and Shelter**

An examination of buildings and shelter as human and social products. Major areas of concern include the impact of the built environment on social processes, the perception and cognition of the built environment, the design, construction and use of buildings as social processes, the development of the design professions, and the distribution of shelter as part of social stratification. (Also listed as Architecture 76.423★.)

Precludes additional credit for Sociology 53.338 taken prior to 1984-85.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

**Sociology 53.345★**

**Stratification and Mobility**

An examination of the principal theoretical and empirical questions in the study of social class and social mobility in complex societies. The bases and forms of inequality are examined with the aid of data from Canada, England, the United States, the Soviet Union, China, Japan and a number of other societies.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

**Sociology 53.346★**

**Industrial Sociology**

An enquiry into the development, structure and prospects of industrial society and post-industrial society, including the relation of industrial institutions to the rest of society, and the internal organization of industrial institutions, including problems of management, labour and union relations.

Precludes additional credit for Sociology 53.246★ (no longer offered).

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

**Sociology 53.347★**

**Power**

The principal concern of the course is the nature of power in human groups — its sources, forms and processes. Particular attention is paid to community and national elites and power structures.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

**Sociology 53.348★**

**Collective Behaviour and Social Movements**

An enquiry into the process of collective action as part of social change at various levels. Topics discussed include crowds, fashions, labour, political and religious movements, rebellion and revolution.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.



**Sociology 53.350★****Political Behaviour**

An examination of sociological contributions to the study of political behaviour and of the relations between politics and the social structure, both in Canada and in other societies. Emphasis is placed upon political socialization, the class basis of politics, conflict, mass movements and change.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

**Sociology 53.351★****Methods of Population Analysis**

An introduction to demographic techniques. Problems in the collection and analysis of population data, such as population censuses and vital registration. Emphasis is placed upon the application of "demographic" methods (e.g., cohort analysis) to other areas of sociological investigation.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

**Sociology 53.355****Bureaucracy and Society**

An examination of the origins and development of large-scale bureaucratic structures in the industrialized nations. Particular attention is given to a critical evaluation of the bureaucratic thesis, namely that bureaucracy operating in the context of large-scale complex organizations is the distinguishing characteristic and ultimate basis of power in contemporary societies. This is accomplished by means of a detailed study of bureaucratic structures and processes in the modern business enterprise, the state and other public and private organizations.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

**Sociology-Anthropology 56.358****Conflict and Conflict Resolution**

A comparative analysis of the structure of social and inter-cultural conflict. Methods for conflict management and resolution are examined with particular reference to mediation, bargaining and negotiation theories. Students are expected to participate in simulation exercises.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

**Sociology-Anthropology 56.360****Development and Social Change**

An enquiry into central theoretical debates pertaining to issues of underdevelopment, modernization, dependence, exploitation and world system formation. Emphasis is placed on the general effects of industrialism and capitalism on the contemporary history of Third World societies. Consideration is given to concrete case studies from across the world.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

**Sociology 53.370****Research Design and Data Analysis**

An integrated approach to the problems involved in the analysis of quantitative data. Research design and procedure and statistical inference are studied. (Successful completion of Sociology-Anthropology 56.200★ and Sociology 53.201★ or equivalent in other departments are highly recommended as a suitable preparation for this course.)

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and workshop four hours a week.

**Sociology 53.373★****Criminal Justice Policy**

A description of Canadian criminal justice administration, including prison, parole, probation and community treatment, with an emphasis on conflicting ideologies and the dynamics of policy-making decisions. Consideration is given to the relationship between criminal justice policy and other aspects of social change.

Prerequisite: Sociology 53.255★ or 53.270 or permission of the Department.

Fall and Winter terms: Lectures and discussion three hours a week.

**Sociology 53.375★****Medical Sociology**

A study of social factors related to health and illness, the illness role, relationships between patients and health practitioners, and the organization of health services. Attention is given to both the social psychology of health and illness and the structure of organizations concerned with health care.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

**Sociology 53.377★****Sociology of Welfare Institutions**

A study of the emergence and position of welfare institutions in contemporary society with special emphasis on their relationship to social change, ideological conflicts and forms of organization.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

**Sociology 53.380****Social Policy**

A study of social policy in relation to social change and issues in Canadian society. This involves the policy orientation and role of the social sciences, especially sociology, in assessing the socio-cultural background, the processes and the consequences of social policy. Contemporary Canadian issues are considered as case studies in social policy.

Prerequisites: Introductory Sociology or Anthropology and at least one additional 200- or 300-level credit in Sociology, or equivalent courses in related disciplines, or permission of the Department.

Lectures and discussion three hours a week.

**Sociology-Anthropology 56.383★****The Anthropology of Art I**

This course considers anthropological approaches to the study of art. The focus is on art in small-scale, non-industrialized societies and on the art of tribal peoples



who have been colonized (so-called "Fourth World" art). Topics include the economic, social, political and symbolic roles of art in social processes. Attention is given to issues of identifying and defining art forms and activities cross-culturally, and to the methods required to study and compare differing aesthetic systems.

Precludes additional credit for Sociology-Anthropology 56.285★ or 56.325★ taken with the same topic.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100, or an introductory course in Art History, or permission of the Department.

Lectures and discussion three hours a week.

#### Sociology-Anthropology 56.384★

##### **The Anthropology of Art II**

This course applies anthropological methods and theories to the analysis of the art of selected non-Western and Fourth World societies. Case materials are drawn from selected societies; for 1986-87: Australia, Canada and West Africa.

Precludes additional credit for Sociology-Anthropology 56.286★ or 56.326★ taken with the same topic.

Prerequisite: Sociology-Anthropology 56.285★ or 56.325★ or 56.383★, The Anthropology of Art I, or permission of the Department.

Lectures and discussion three hours a week.

#### Sociology 53.386★

##### **Field Placement: Criminology and Criminal Justice Concentration**

Experience in an agency setting, which provides the basis for translating the academic dimension into practical involvement in various aspects of criminal justice. This course is graded on a satisfactory/unsatisfactory basis. There is no supplemental examination in this course.

Prerequisite: Open only to those students formally admitted to and registered in the Criminology and Criminal Justice concentration.

Fall and Winter terms.

#### Sociology 53.388★

##### **An Examination of Current Issues in Criminal Justice**

A seminar focusing on conflicting goals among components of the criminal justice system, the theory and practice of correctional institutions and their alternatives, and offenders' rights.

Prerequisites: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, and Third-year standing or permission of the Department.

Seminar three hours a week.

#### Sociology-Anthropology 56.391★ and 56.392★

##### **Course-Related Tutorials**

See explanatory note on p. 252.

#### Anthropology 54.410

##### **The Ethnographic Enterprise**

An examination of the premises underlying particular cases of empirical work in anthropology. The value of various anthropological paradigms for the solution of standard ethnographic problems.

Prerequisite: Third-year Honours standing or permission of the Department.

Seminar two hours a week.

#### Sociology-Anthropology 56.431

##### **Communication Policy**

The course examines the factors that shape the development and maintenance of Canadian communication and

cultural policies and practices. The regulatory process and state management of communication and cultural industries are evaluated. The course provides an overview of the analytical literature as it relates to specific cases of policy formation. The policy cases vary from year to year. (Also listed as Mass Communication 27.431.)

Precludes additional credit for Sociology-Anthropology 56.411 or Mass Communication 27.411 taken prior to 1986-87.

Prerequisites: Fourth-year Honours standing. Mass Communication 27.311 or Sociology-Anthropology 56.311.

Seminar three hours a week.

#### Sociology 53.443★

##### **Selected Problems in the Uses of Sociology and Social Policy Analysis**

An examination of selected problems in the relation between sociology as a discipline and the uses to which it may be put. Depending on the interests of the instructor, these may include: social criticism, social intervention, social policy and social planning, social engineering, systems analysis and action research.

Prerequisite: Final-year Honours standing or permission of the Department.

Seminar two hours a week.

#### Sociology 53.450★

##### **Advanced Research Methodology**

A study of specific methodological topics in social research. Among the topics that may be included are: secondary data analysis, elite interviewing, observational techniques, social indicators, and evaluation research.

Prerequisite: Final-year Honours standing or permission of the Department.

Seminar two hours a week.

##### **Note:**

The following courses, Sociology 53.451★-53.458★, are workshops organized either around a specific research topic or around some policy or interventionist issue. The content is expected to vary from year to year reflecting the current research interests of the instructor. When a workshop is offered, a detailed description will be available. In general, specific area workshops are unlikely to be offered more than once in any two-year period.

#### Sociology 53.451★

##### **Workshop in Demography/Human Ecology**

A research- and/or policy-oriented seminar that uses census data or other secondary sources to examine topics in Canadian population, technological development, migration or resource use, depending on the interests of the instructor.

Prerequisite: Final-year Honours standing or permission of the Department.

Seminar two hours a week.

#### Sociology 53.452★

##### **Workshop on Work and Organizations**

A research-oriented seminar that, depending on the instructor, may examine the occupational distribution in Canada, ethnicity, gender and work, occupational choice, trade unions, professional organizations, the professions or bureaucracy.

Prerequisite: Final-year Honours standing or permission of the Department.

Seminar two hours a week.



**Sociology 53.453★****Workshop in Criminology/Deviance**

A seminar that, depending on the research interests of the instructor, may consider crime, criminal justice, social processes relating to the implementation of criminal justice policy, or other aspects of criminality or deviance. Prerequisite: Final-year Honours standing or permission of the Department.

Seminar two hours a week.

**Sociology 53.454★****Workshop on Sociology of Education**

A research- or policy-oriented seminar that, depending on the research interests of the instructor, may examine teacher expectancy effects, student culture, barriers to equality of access or other substantive issues.

Prerequisite: Final-year Honours standing or permission of the Department.

Seminar two hours a week.

**Sociology 53.455★****Workshop on Stratification and Mobility**

A research-oriented seminar that, depending on the research interests of the instructor, may examine differentiation over time or comparatively, patterns of inheritance mobility, or the effects of ethnicity, of gender and of past education on returns to education.

Prerequisite: Final-year Honours standing or permission of the Department.

Seminar two hours a week.

**Sociology 53.456★****Workshop in Urban Sociology**

A research-oriented seminar examining aspects of the Ottawa area. These may include patterns of urban growth and change, residential and urban-rural mobility, depending on the research interests of the instructor.

Prerequisite: Advanced Honours standing or permission of the Department.

Seminar two hours a week.

**Sociology 53.457★****Workshop in Social Psychology**

A research-oriented seminar that, depending on the research interests of the instructor, may focus on one or more of the following topics: attribution theory, cognitive social psychology, conformity, ethno-methodology, psychoanalysis or victimology.

Prerequisite: Final-year Honours standing or permission of the Department.

Seminar two hours a week.

**Sociology 53.458★****Workshop in Political Sociology**

A research-oriented seminar that, depending on the research interests of the instructor, may examine voting behaviour, political movements and parties, national and community elites, relations between society and the state and social conflict.

Prerequisite: Final-year Honours standing or permission of the Department.

Seminar two hours a week.

**Sociology-Anthropology 56.465★****Selected Problems in the Study of Ethnic and Race Relations**

This seminar is designed to explore the social, political, economic and ideological relevance of ethnicity and "race" in Canada and other Western societies. It examines the efficacy of several theoretical frameworks in elucidating issues such as ethnic inequality, aboriginal

rights, racism, ethnic mobilization, and the position of immigrant and minority women.

Prerequisite: Final-year Honours standing or permission of the Department.

Seminar two hours a week.

**Anthropology 54.470★****Selected Problems in the Study of North American Native Peoples**

This is an advanced seminar course for the in-depth study and discussion of North American native peoples. Attention is given to both change and persistence in social and cultural patterns through time, as well as to the contemporary conditions under which native people live. Emphasis is placed on Canadian Indians, Inuit and Metis, and their position in the wider society. Students undertake a critical research project.

Prerequisite: Final-year Honours standing or permission of the Department.

Seminar two hours a week.

**Anthropology 54.475★****Contemporary Problems in Anthropology**

Selected problems in anthropology, not ordinarily treated in the regular course program. The choice of topics varies from year to year. Topic for 1986-87: *Workshop in Semiology*. A critical examination of different approaches to the relationship between culture and signs broadly defined, with an emphasis on the workings of symbolism and language from within themselves as well as in the historical context of specific cultural environments. "Scripts" taken from many different sources — e.g., non-Western rituals, folk narratives, the scriptures, records of ancient astrology, poetry, the modern media — are analyzed with a view to illustrating alternative theories of discourse, including structuralism, psychoanalysis, Marxism, and phenomenology. Recent trends in the field of semiology are also examined.

Prerequisite: Final-year Honours standing or permission of the Department.

Seminar two hours a week.

**Anthropology 54.476★****Contemporary Problems in Anthropology**

Selected problems in anthropology, not ordinarily treated in the regular course program. The choice of topics varies from year to year. Topic for 1986-87: *Anthropology, Public Policy and Aboriginal Rights*. Native groups in Canada are currently attempting to redefine their relationships to Canadian society. That process involves questions of ownership and control of land and resources, self-government, legal status and changing conceptions of what constitutes aboriginality. Within the framework of modern social theory, the course focuses on the nature of the issues underlying these questions and the methods that have emerged for their resolution. Emphasis is placed on the role of anthropology in policy making, particularly the kinds of inputs that are being made by cultural ecologists, ethno-historians, and development specialists. (Students interested in the legal aspects of the topic are also referred to Law 51.354★, Law and Native Peoples of Canada.)

Prerequisite: Final-year Honours standing or permission of the Department.

Seminar two hours a week.

**Sociology-Anthropology 56.478★****Anthropology of the Polar Basin**

A comparative study of the social and cultural anthropology of the native peoples indigenous to the Polar Basin. Emphases are placed on similarities and differ-

ences in social structure, cultural forms and modernization in Canada, Alaska, Greenland, USSR and Northern Europe. Questions related to administrative policy concerning land rights, participation in modern resource development projects and the development of nativistic movements are also examined.

Prerequisite: Final-year Honours standing or permission of the Department.

Seminar two hours a week.

Sociology 53.485★

**Contemporary Problems in Sociology**

Selected problems in sociology, not ordinarily treated in the regular course program. The choice of topics varies from year to year. Topic for 1986-87: *Men's Studies*. A historical orientation to men in society focusing on changes under conditions of late capitalism; an analysis of the social construction of accepted definitions of masculinity and of appropriate male-role behaviour in work, marital, parenting, and other social contexts; an examination of changing power relations between men and women, men and their children, and among men in particular social contexts; an investigation into issues of legal equality for men; and an exploration of the politics and processes of men's movements.

Prerequisite: Third- or Fourth-year standing or permission of the Department.

Seminar two hours a week.

Sociology 53.486★

**Contemporary Problems in Sociology**

Selected problems in sociology, not ordinarily treated in the regular course program. The choice of topics varies from year to year.

Sociology 53.491★ and 53.492★

Anthropology 54.491★ and 54.492★

**Tutorial in Sociology or Anthropology**

See explanatory note, p. 252.

Sociology 53.495, Anthropology 54.495

**Honours Practicum**

At the end of their final year, Honours candidates are required to present a major research essay. For Honours students in Anthropology, and for those Honours students in Sociology who choose this option, this requirement is met through the Practicum. Students present their essay proposals for discussion and criticism to fellow students and faculty, and report periodically upon the paper's progress. Common problems of conceptualization, research design, analysis and interpretation are taken up for consideration.

Prerequisite: Final-year Honours standing.

Sociology 53.498

**Honours Essay**

At the end of their final year, Honours candidates are required to present a major research essay. For Honours students in Sociology the Honours Essay, carried out under a faculty supervisor, is one way of meeting this requirement. Early in the year and in consultation with the Co-ordinator of Honours (Sociology), the student selects or is assigned a supervisor. The student is orally examined upon the Essay after its submission.

Prerequisite: Final-year Honours standing.

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**Graduate Courses**

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Final-year Honours students are encouraged to take one or more graduate seminars, which are available to them with the permission of the Department. A variety of theoretical, substantive and methodological courses are available. Specific details are contained in the 1986-87 Graduate Studies and Research calendar.

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**Courses Planned for Summer School Day and Evening Divisions and Fall-Winter Evening Division**

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*Summer*

At least one of the introductory courses (Sociology 53.100, Anthropology 54.100 or Sociology-Anthropology 56.100) will be given every Summer in both divisions.

Every Summer, one of the required theory courses will be given. Other offerings will depend upon departmental capabilities and student interest and demand. A variety of types and levels of courses will be offered each year.

*Fall-Winter Session Evening Division*

The introductory courses (Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100) are offered every year in one or more sections. One of the required methods courses (Sociology-Anthropology 56.200★ and either Sociology 53.201★ or Anthropology 54.201★) and one of the required theory courses (Sociology-Anthropology 56.305, Sociology 53.306 and Anthropology 54.310) will be offered in every Evening session.



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## Members of the Institute

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### Director

J.L. Black, Co-ordinator of Programs

### Honours Adviser

Carl H. McMillan

### Associated Members of the Faculty

A. Abonyi (*Soviet and East European Studies*)

Glynn R. Barratt (*Russian*)

Robert Bedeski (*Political Science*)

J.L. Black (*History*)

Bohdan R. Bociurkiw (*Political Science*)

R.L. Carson (*Economics*)

R. Carter Elwood (*History*)

J. Fedorowicz (*Soviet and East European Studies*)

Ben Jones (*Russian*)

L. Kos-Rabcewicz-Zubkowski (*Law, University of Ottawa*)

Jeanne Laux (*Political Science, University of Ottawa*)

D. le Berrurier (*Art History*)

Angelina Lewinson (*Russian*)

Maria Los (*Criminology, University of Ottawa*)

Carl H. McMillan (*Economics*)

George Melnikoff (*Russian*)

J. George Neuspiel (*Law*)

Gertrud Neuwirth (*Sociology*)

Adam Podgorecki (*Sociology*)

Teresa Rakowska-Harmstone (*Political Science*)

George Roseme (*Political Science*)

Radoslav Selucky (*Political Science*)

Lloyd Strickland (*Psychology*)

John W. Strong (*History*)

Halina Van de Lagemaat (*Russian*)

Paul Varnai (*Russian*)

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## General Information

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A Committee on Soviet and East European Studies was formed in 1963 to foster interdisciplinary studies, research, conferences and publications in this area. The Committee was transformed into the Institute of Soviet and East European Studies in 1970. Faculty members from ten disciplines (Art History, Criminology, Economics, Geography, History, Law, Political Science, Psychology, Russian and Sociology) participate in the Institute's programs. They are joined on an occasional basis by visiting scholars (including visitors from the U.S.S.R. and Eastern Europe).

On the undergraduate level, the Institute offers an interdisciplinary Bachelor of Arts (Honours) program in Soviet and East European Studies. The Institute also administers a program of interdisciplinary studies leading to a Master of Arts degree in Soviet and East European Studies, the only one of its kind in Canada. The curricula for both programs are offered largely through participating departments. Students in the Institute's programs are eligible to apply, under the academic exchange agreement between Carleton and the Leningrad State University, for ten months of study in the Soviet Union. A similar exchange agreement exists with the University of Warsaw; and an agreement with the International Cultural Institute in Budapest provides for graduate studies at post-secondary institutions in Hungary. Students participating in the Institute's programs have at their disposal a specialized periodicals reading room in the Institute, the University library's collection of books, documents, periodicals and micro-materials on the Soviet Union and Eastern Europe

and the extensive holdings of the National Library and other specialized libraries in Ottawa.

Each year the Institute organizes a series of public seminars and lectures by invited specialists from outside the University, on a broad range of topics bearing on the Soviet Union and Eastern Europe. The Institute also sponsors frequent conferences and colloquia and promotes extension courses in the area. The Institute maintains organized research programs in two broad areas: East-West relations (with current emphasis on their economic, legal and military-strategic aspects) and nationalities problems and related questions of minority rights in the U.S.S.R. and Eastern Europe. The Institute issues a regular series of working papers and special studies, a Bibliographical Series on the U.S.S.R. and Eastern Europe, and has sponsored nine volumes in the Carleton Library Series in Soviet and East European Studies.

Because of its interdisciplinary character, a degree in Soviet and East European studies provides a useful basis for a career in government service either at home or abroad. The expansion of East-West economic relations has increased the demand for area specialists in the business and financial communities. A new emphasis on regional studies and international relations at the secondary-school level makes this program attractive to school boards. For many students, studies in Soviet and East European affairs constitute a convenient first step to more specialized professional or academic training.

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## Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all regulations and requirements of the Institute as set out below.

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## Honours Program

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The objective of the Honours program is to equip students with indispensable linguistic tools and to provide, through an interdisciplinary approach, an integrated knowledge of the cultures, historical developments and contemporary social, economic and political systems of the area. The program leads to the degree of Bachelor of Arts with Honours in Soviet and East European Studies.

## Combined Honours Program

A Combined Honours degree between Soviet and East European Studies and the School of Journalism is offered to interested students.

Course requirements for this degree are planned by the Director of the Institute in consultation with the Director of the School of Journalism, and are designed to accommodate the students' interests and needs.

Combined Honours programs are also possible in conjunction with other disciplines and are governed by the regulations of the departments concerned.

Further details on these programs may be obtained from the institute.

## Admission Requirements

Admission to the program must be approved by the Institute of Soviet and East European Studies and by the Faculty of Social Sciences Committee on Honours. Stu-

dents with at least a 65 percent average in Senior Matriculation or a C standing in the Carleton Qualifying-University year may be enrolled in the program in the First year. With the consent of the Institute, students may also enter the program in subsequent years provided they have maintained Honours standing and have completed the program's course requirements to that point.

### Course Requirements

A total of 20 credits is required for the Honours B.A. in Soviet and East European Studies.

All candidates normally are required to take three credits in the Russian language beyond the introductory level: Russian 36.202 (Intermediate Russian, for which Russian 36.100, or its equivalent, is a prerequisite), Russian 36.302 (Advanced Russian) and either Russian 36.303 (Russian Translation) or Russian 36.203 (Russian Grammar). Students normally are expected to complete their language requirements by the end of their Third year. Other Russian and Eastern European language and literature courses may be selected as additional components of the candidate's Honours program (see below).

In the First year, courses must be chosen, in consultation with the Honours Supervisor, from the 100 level, or from higher-level courses open to First-year students. These courses should be selected as preparation for more specialized Soviet and East European area courses offered in various disciplines. Introductory courses in economics, European history and political science (as well as other introductory courses in the social sciences) therefore normally are taken at this stage.

In the following three years, candidates must select seven additional credits (representing no less than three different disciplines) from the area-related courses offered by participating departments and listed below. The following three courses are regarded as forming the core of the Institute's undergraduate area studies program: Economics 43.371★ and 43.372★ (covering the Soviet and East European economies), History 24.260 (Russian and Soviet History) and Political Science 47.320 (Soviet Government and Politics) and all three are strongly recommended to all candidates for the degree. In addition, an Honours essay is required in the Fourth year (see below).

Four additional credits are to be selected, in consultation with either the Honours Adviser or the Director.

### Courses Offered by Participating Departments

#### Art History

- 11.221★ Eastern Medieval Art
- 11.422★ Topics in Eastern Medieval Art
- 11.431★ Topics in Iconography

#### Russian

- 36.201★ Russian Conversation
- 36.203 Russian Grammar
- 36.260 Russian Literature in English Translation — Nineteenth and Twentieth Centuries
- 36.290 Twentieth-Century East-European Literature in English Translation
- 36.301★ Advanced Russian Conversation
- 36.303 Russian Translation
- 36.304 Russian Style and Composition
- 36.335 Major Authors: Pushkin to Chekhov
- 36.355 Major Authors: Gorky to Solzhenitsyn
- 36.360★ Special Topic: Dostoevsky to Chekhov (in English Translation)

- 36.361★ Special Topic: The Revolution and After (in English Translation)
- 36.390 Slavic Language Tutorial
- 36.399 Introduction to Methods of Research
- 36.405 Tutorial: History of the Russian Language
- 36.435★ Tutorial: Special Topic (Literature)
- 36.445★ Tutorial: Special Topic (Drama)
- 36.455 Tutorial: Special Topic (Post-1917 Period)
- 36.493★ Translation Tutorial I
- 36.494★ Translation Tutorial II

#### Ukrainian

- 36.216 Advanced Ukrainian

#### Slavic Languages

- 36.390 Slavic Language Tutorial

#### German

- 22.255★ Literature of the German Democratic Republic
  - 22.260★ Bertolt Brecht
  - 22.401★ Formal German Speech
- (These courses are conducted in German)

#### Geography

- 45.221★ Geographical Challenges of Contemporary Economies
- 45.360★ Soviet Union
- 45.361★ East Europe
- 45.570★ Problems in Arctic and Subarctic Environments

#### History

- 24.260 History of Russia and the U.S.S.R.
- 24.360 History of the U.S.S.R.
- 24.361★ The Russian Empire
- 24.365★ The Soviet Union in International Affairs from Comintern to Cold War
- 24.366★ Modern East Central Europe
- 24.460 Selected Problems in Russian History
- 24.461 Selected Problems in Soviet History
- 24.560 Revolutionary Russia, 1808-1921
- 24.589 Historiography (section dealing with Modern Russia)

#### Economics

- 43.365★ The Economics of Planning
- 43.371★ Socialist Economic Systems: The Soviet Model
- 43.372★ Socialist Economic Systems: Eastern European Variants
- 43.536★ Comparative Economic Systems I
- 43.537★ Comparative Economic Systems II

#### Law

- 51.420★ Advanced International Economic Law
- 51.463 Public International Law
- 51.488 Socialist Legal Systems
- 51.563 Socialist Legal Systems

#### Philosophy

- 32.220 Introduction to Marxist Philosophy

#### Political Science

- 47.314★ Eastern European Politics
- 47.316★ Revolution
- 47.320 Soviet Government and Politics
- 47.330★ Politics and Literature
- 47.333 Modern Political Thought and Ideologies
- 47.431★ Marxist Thought
- 47.432★ Contemporary Marxism
- 47.461★ Soviet Foreign Policy
- 47.483★ Foreign Policies of Major East Asian Powers



- 47.514★ Comparative Communist Politics: Theory and Practice  
 47.515★ Comparative Communist Politics: Selected Aspects  
 47.516★ Selected Problems in Soviet Politics

#### *International Affairs*

- 46.520★ Strategy and Security  
 46.535★ Political Economy of East-West Relations  
 46.566★ Integration in Eastern Europe

#### *Sociology*

- 53.345★ Stratification and Mobility  
 53.545★ Power and Stratification  
 53.584★ Modern Marxist Theory

#### *Soviet Studies*

- 55.400★ Aspects of Eastern Europe  
 55.401★ Aspects of Eastern Europe  
 55.490 Tutorial in Soviet and East European Studies  
 55.491★ Tutorial in Soviet and East European Studies  
 55.492★ Tutorial in Soviet and East European Studies  
 55.500★ Interdisciplinary Seminar on the Soviet Union and Eastern Europe  
 55.501★ Interdisciplinary Seminar on the Soviet Union and Eastern Europe

#### *Note:*

Not all of the foregoing courses are offered in any given year, and not all combinations of courses are possible. See departmental listings for further details.

#### **Honours Essay**

Students taking Honours in Soviet and East European Studies must write a major research essay (Soviet Studies 55.498) during their final year. This essay carries the weight of one credit. The subject for research will be selected in consultation with the Institute and a supervisor will be assigned. An oral defence of the essay is required.

#### **Academic Standing**

Students must maintain Honours standing as prescribed by the general requirements of the Faculty of Social Sciences.

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#### **Graduate Program**

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The Institute offers an interdisciplinary Master of Arts program in Soviet and East European Studies with the participation of faculty from the Departments of Economics, Geography, History, International Affairs, Law, Political Science, Russian and Sociology, as well as invited specialists from other universities and visiting scholars from the U.S.S.R. and Eastern Europe. It is designed for students wishing to acquire specialized knowledge of the Soviet and East European area, including proficiency in Russian, before proceeding towards a doctoral degree in one of the disciplines represented in the program, either at Carleton or another university. The program is also suitable for students aspiring to a professional, business or government career which requires knowledge of the area. For details, consult the Graduate Studies and Research Calendar.

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#### **Courses Offered**

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##### **Soviet Studies 55.400★**

##### **Aspects of Eastern Europe**

An interdisciplinary seminar in aspects of the study of Eastern Europe with specific content dependent on the current emphasis and resources of the program of the Institute. Recommended for Institute of Soviet and East European Studies Honours students.

##### **Soviet Studies 55.401★**

##### **Aspects of Eastern Europe**

See description of Soviet Studies 55.400★.

##### **Soviet Studies 55.402★**

##### **Aspects of Eastern Europe**

See description of Soviet Studies 55.400★.

Not offered 1986-87.

##### **Soviet Studies 55.490**

##### **Tutorial in Soviet and East European Studies**

Tutorials or reading courses on selected topics may be arranged with the permission of the Institute and agreement of the instructor.

Prerequisite: Permission of the Institute.

##### **Soviet Studies 55.491★**

##### **Tutorial in Soviet and East European Studies**

Tutorials or reading courses on selected topics may be arranged with the permission of the Institute and agreement of the instructor.

Prerequisite: Permission of the Institute.

##### **Soviet Studies 55.492★**

##### **Tutorial in Soviet and East European Studies**

Tutorials or reading courses on selected topics may be arranged with the permission of the Institute and agreement of the instructor.

Prerequisite: Permission of the Institute.

##### **Soviet Studies 55.498**

##### **Honours Essay**

Prerequisite: Permission of the Institute.

##### **Soviet Studies 55.500★**

##### **Interdisciplinary Seminar on the Soviet Union and Eastern Europe**

Prerequisite: Permission of the Institute.

Fall term.

##### **Soviet Studies 55.501★**

##### **Interdisciplinary Seminar on the Soviet Union and Eastern Europe**

Prerequisite: Permission of the Institute.

Winter term.

# Department of Spanish

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## Officers of Instruction

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### *Chairman*

F.J. Hernández

### *Assistant Chairman*

J.M. López-Saiz

### *Supervisor of Language Courses*

P.J. Roster

### *Supervisor of Honours and Major Studies*

J. Jurado

### *Supervisor of Graduate Studies*

R.L. Jackson

### *Director of Winter Program Abroad*

J.M. López-Saiz

### *Professors*

R.L. Jackson

J. Jurado

### *Associate Professors*

F. Atienza

F. Hernández

R. Larson

A. Lopez-Fernández

A. Lozano

C.A. Marsden

P.J. Roster, Jr.

### *Assistant Professor*

J.M. López-Saiz

### *Instructor*

M.A. Giella

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## General Information

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The Department of Spanish offers both Major and Honours programs. Classes are generally conducted in Spanish, and laboratory instruction, an integral part of courses at the introductory and intermediate levels, is also available to students in the more advanced language courses.

The Department offers introductory Portuguese when there is a sufficient number of interested students.

Lists of prescribed texts and supplementary reading for all courses are available from the Secretary of the department.

Students are encouraged to take advantage of the favourable atmosphere for informal practice of the language provided by La Sociedad Hispanica (Hispanic Society).

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## Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 90), in addition to all departmental regulations and requirements as set out below.

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## Acceleration and Intensive Spanish

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Students who are beginning the study of Spanish at university, and who are considering Spanish as a Major, should take note of Spanish 38.120 Intensive Introductory Spanish (two credits), 38.151 Intensive Intermediate Spanish, designed specifically for potential Majors, and the Intensive Spanish program, a year which includes a term abroad, devoted exclusively to the study of Spanish (see below).

### **Summer Session and Evening Offerings**

The Department normally offers language courses (Spanish 38.115, 38.150, 38.201★, 38.202★, 38.301★, 38.302★) through the 300 level in both Day and Evening divisions during the year (38.115 Summer session). In addition, the Department offers Spanish 38.210★ and 38.211★ every other year in the Evening division and has as well a system of rotation that ensures the offering of a different literature course at the 300, 400 and 500 levels each year in the Evening.

### **Intensive Spanish Program and Winter Program Abroad**

The Intensive Spanish program is a year devoted exclusively to the study of Spanish. The program is divided into Fall term and Winter term. Students may enrol in either of the two terms or in both. This program will not be offered in the event of insufficient enrolment.

### *Fall Term: Language Acquisition*

The Fall term of the Intensive Spanish program, offered at Carleton, is designed to provide a maximum of acceleration in language acquisition to well-motivated students with little or no previous training in Spanish. While intended for the beginning student, the program is flexible enough to accommodate students who already have a grade of at least C+ in Grade 13 Spanish or in Spanish 38.115 or the equivalent. Such students may audit the introductory unit (Spanish 38.115) of the program but may receive only an additional one and a half credits upon successful completion of the Fall term.

The full Fall term covers the following courses:

### *Spanish*

38.115 Introductory Spanish

38.150 Intermediate Spanish

38.201★ Spanish Conversation

Students may enrol in any course unit of this program for equivalent credit. Similarly, they may withdraw from the program, in exceptional cases, after each unit, receiving equivalent credit after successful examination for work done.

This program entails 15 hours of class a week plus language laboratory instruction and practice for a total of up to two and a half credits.

During the Fall term students are charged with the responsibility of spending, together with the other members of the program, as much time as possible outside the classroom under the guidance of a "group leader" (a senior student in Spanish), who will encourage them to practise whatever material they are being exposed to in class, and who will organize drill sessions and other activities for the purpose of reinforcing what the students are learning during regular classroom hours. After successful completion of the Fall term, students have the option of joining the Winter term of the Intensive Spanish



program or enrolling in up to two and a half credits in the subjects of their choice.

#### *Winter Term: Language and Civilization*

During the Winter term the program is held in a Spanish-speaking country, where students continue their studies by taking another two and a half compressed credits in Spanish.

Courses available abroad are:

#### *Spanish*

- 38.202★ Spanish Composition
- 38.210★ Spanish Civilization
- 38.211★ Spanish American Civilization
- 38.301★ Advanced Spanish Conversation
- 38.302★ Advanced Spanish Composition

The program requires 15 class hours a week plus regular field trips. Attendance is compulsory, subject to the usual exceptions.

The cost of the program, including university fees and room and board, is somewhat lower than a similar period of full-time study spent at Carleton, plus air fare. Financial assistance is available in the form of the Sara Helen Parry Hughes Travel Award. For terms see Awards and Financial Assistance section of this Calendar.

#### *Admission Requirements*

Admission to the Winter Program Abroad (Winter term) is limited to students who have (a) completed the Intensive Spanish program, Fall term; or (b) have a credit in an intermediate-level Spanish course and Spanish 38.201★ or the equivalent.

Second- or Third-year Spanish Majors who wish to take only this second half of the program are advised to take Spanish 38.201★, and four other half credits from those available in other disciplines during the Fall term. Non-Majors wishing to enrol in the program should consult not only the Department of Spanish concerning the program, but also their Major departments (chosen or intended) to arrange a Major program that will permit the necessary absence from Ottawa.

Interested students should apply to Professor J.M. López-Saiz, Director of the Winter Program Abroad, (Winter term), Spanish Department, preferably not later than October 15, 1986.

#### **Majors Programs**

Interested students must consult the Department as early as possible to plan their program. General requirements are as laid down on pp. 81-91 of the Calendar. A Major in Spanish normally consists of five credits after Spanish 38.150, 38.151, or 38.120; Spanish 38.210★ and 38.211★ are compulsory, and three literature credits at the 300 level must be taken. A Combined Major consists of four credits beyond the intermediate level, to include Spanish 38.210★, 38.211★ and two literature credits at the 300 level.

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#### **Minimum Requirements for Majors and Honours**

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The Department requires Majors and Honours students to have a minimum of C- in each required literature course at the 300 or 400 level or an average of C overall in these courses.

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#### **Honours Programs**

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##### **Honours in Spanish**

General regulations concerning Honours programs are to be found on pp. 88-89. The Honours program in Spanish is designed to give the student a thorough knowledge of Hispanic language and literature. Lectures and seminars cover the origins and evolution of the language, the principal periods of Spanish and Spanish American literature, and include some study of allied literatures with a view to further work at the graduate level. The program consists of eight credits beyond the intermediate level to include Spanish 38.210★, 38.211★, three literature credits at the 300 level and at least two literature credits at the 400 level. For an explanation of Honours standing see p. 90.

##### **Combined Honours in Spanish and French**

This program is recommended especially for students wishing to enter a Faculty of Education in one of the Ontario universities after completion of the B.A. with a view to becoming a language teacher in a secondary school. Six credits beyond the intermediate level are required in each language. Required courses in Spanish are 38.210★, 38.211★, two literature credits at the 300 level and at least one literature credit at the 400 level.

##### **Other Combined Honours Programs**

Students interested in pursuing an Honours program in which Spanish is combined with another discipline are invited to discuss the matter with the Supervisor of Honours in the Department of Spanish. The minimum requirements are six credits beyond the intermediate level in Spanish, to include Spanish 38.210★, 38.211★, two literature credits at the 300 level and at least one literature credit at the 400 level.

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#### **Graduate Courses**

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Students in Fourth-year Honours may take a maximum of two credits at the 500 level with special permission of the Graduate Studies Committee of the Department of Spanish. These courses are listed separately in the Graduate Studies and Research Calendar.

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#### **Prerequisites**

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All students wishing to enrol in a course for which they do not have the prerequisite must obtain the permission of the Department.

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**Courses Offered**


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**Note:**

Students who have already taken any of the following full-credit courses (no longer offered) may not enrol for additional credit in either of the corresponding half-credit courses introduced in 1980-81: Spanish 38.210 (38.210★, 38.211★), 38.320 (38.320★, 38.321★), 38.330 (38.330★, 38.331★), 38.350 (38.350★, 38.351★), 38.415 (38.415★, 38.416★), 38.420 (38.420★), 38.430 (38.430★, 38.431★), 38.435 (38.435★, 38.436★), 38.440 (38.440★, 38.441★), 38.460 (38.460★, 38.461★), 38.470 (38.470★, 38.471★).

**Spanish 38.115****Introductory Spanish**

A course for those with no knowledge of Spanish, designed to give the student the fundamentals of spoken and written Spanish, through oral practice, reading and laboratory work.

Day and Evening divisions: Lectures and laboratory four hours a week.

Also offered in Intensive Spanish Program (Fall term).

**Spanish 38.120 (two credits)****Intensive Introductory Spanish**

A course designed for students with little or no knowledge of Spanish. Using an intensive audiolingual approach to Spanish, students can attain in one year the level of proficiency and fluency normally gained in Spanish 38.115 and 38.150. Students not making satisfactory progress will be transferred to the regular introductory course (Spanish 38.115).

Prerequisite: Permission of the Department.

Day division: Lectures and laboratory six hours a week.

*M.A. Giella*

**Spanish 38.150****Intermediate Spanish**

A course for those with at least one year of Spanish. Grammar review, extensive reading, guided composition, laboratory work.

Prerequisite: Spanish 38.115 or equivalent.

Day and Evening divisions: Lectures and laboratory four hours a week.

Also offered in Intensive Spanish Program (Fall term).

**Spanish 38.151****Intensive Intermediate Spanish**

A course for potential Majors and for those with Grade 13 Spanish or equivalent. Review of grammar and some advanced syntax; extensive reading, discussion and composition. Laboratory work.

Prerequisites: Spanish 38.115 or equivalent, and permission of the Department. With special permission of the Department, students enrolled in this course may take Spanish 38.201★ simultaneously.

Day division: Lectures and laboratory four hours a week.

*J. Jurado*

**Spanish 38.201★****Spanish Conversation**

Conversation and discussion of current problems, supplemented by occasional written work.

Prerequisite: Spanish 38.150 or 38.151 or 38.120 or permission of the Department.

Day and Evening divisions, Fall term: Three hours a week.

Also offered in Intensive Spanish Program (Fall term).

**Spanish 38.202★****Spanish Composition**

A course designed to consolidate the linguistic knowledge attained in Spanish 38.150 and to inculcate the elements of a good Spanish style.

Prerequisite: Spanish 38.150 or 38.151 or 38.120 or permission of the Department.

Day and Evening divisions, Winter term: Three hours a week.

Also offered in Winter Program Abroad (Winter term).

*M.A. Giella*

**Spanish 38.210★****Spanish Civilization**

The cultural heritage of Spain in its social and geographical contexts.

Prerequisite: Spanish 38.150 or 38.151 or 38.120 or permission of the Department.

Evening division, Fall term: Three hours a week.

Also offered in Winter Program Abroad (Winter term).

*F. Hernández*

**Spanish 38.211★****Spanish-American Civilization**

The cultural heritage of Spanish America in its social and geographical contexts.

Prerequisite: Spanish 38.150 or 38.151 or 38.120 or permission of the Department.

Evening division, Winter term: Three hours a week.

Also offered in Winter Program Abroad (Winter term).

*M.A. Giella*

**Spanish 38.235****An Introduction to Hispanic Theatre**

A study of the theory and practice of dramatic production in Spain and Spanish America together with detailed analysis and interpretative reading of representative plays. Students in the course are required to participate in the staging of a play.

Prerequisite: Spanish 38.150 or 38.151 or 38.120 or permission of the Department.

Not offered 1986-87.

**Spanish 38.301★****Advanced Oral Spanish**

An advanced sequel to Spanish 38.201★.

Prerequisite: Spanish 38.201★ or permission of the Department.

Day division, Fall term: Three hours a week.

Also offered in Winter Program Abroad (Winter term).

*A. López-Fernández*

**Spanish 38.302★****Advanced Spanish Composition**

An advanced sequel to Spanish 38.202★.

Prerequisite: Spanish 38.202★ or permission of the Department.

Day division, Winter term: Three hours a week.

Also offered in Winter Program Abroad (Winter term).

*F. Hernández*

**Spanish 38.303★****Spanish Phonetics and Phonology**

A descriptive study of the sounds and sound patterns of Spanish. Practical exercises, written and oral.

Recommended for teachers.

Prerequisite: Spanish 38.201★ and 38.202★ or permission of the Department.

Not offered 1986-87.



Spanish 38.305

**Intensive Oral Spanish**

An intensive course in Spanish conversation which, being offered only in a Spanish-speaking country, also provides an introduction to Hispanic culture. Students who satisfactorily complete this course are ineligible to enrol subsequently in Spanish 38.201★ or 38.301★.

Offered only in the Summer session. Compulsory attendance at all classes and participation in all activities.

Prerequisite: Spanish 38.150 or 38.151 or 38.120 or permission of the Department.

Not offered 1986-87.

Spanish 38.320★

**The Golden Age I**

A study of representative works of Spanish literature of the Renaissance and Early Baroque periods.

Prerequisite: Spanish 38.210★ or 38.235 or permission of the Department.

Day division, Fall term: Three hours a week.

*J.M. López-Saiz*

Spanish 38.321★

**The Golden Age II**

A study of representative works of Spanish literature of the Baroque period.

Prerequisite: Spanish 38.210★ or 38.235 or permission of the Department.

Day division, Winter term: Three hours a week.

*J. Jurado*

Spanish 38.330★

**Nineteenth-Century Spanish Literature**

A study of representative works of the major movements (Romanticism, *costumbrismo*, Realism and Naturalism) and authors of Spanish literature of the nineteenth century.

Prerequisite: Spanish 38.210★ or 38.235 or permission of the Department.

Evening division, Fall term: Three hours a week.

*F. Atienza*

Spanish 38.331★

**Twentieth-Century Spanish Literature**

A study of representative works of Spanish literature from the Generation of 1898 on.

Prerequisite: Spanish 38.210★ or 38.235 or permission of the Department.

Evening division, Winter term: Three hours a week.

*A. López-Fernández*

Spanish 38.350★

**Spanish-American Literature, 1500-1888**

A study of representative works of Spanish-American literature of the Colonial Period and the nineteenth century prior to Modernism.

Prerequisite: Spanish 38.211★ or 38.235 or permission of the Department.

Day division, Fall term: Three hours a week.

*F. Hernández*

Spanish 38.351★

**Spanish-American Literature from Modernism to the Present**

A study of representative works of Spanish-American literature since 1888.

Prerequisite: Spanish 38.211★ or 38.235 or permission of the Department.

Day division, Winter term: Three hours a week.

*P.J. Roster*

Spanish 38.402★

**Theories of Literature**

This course focuses on the theoretical discussion of literature from about 1920 to the present. Included in the study are Russian Formalism, American New Criticism and such other approaches as the structuralist, semiotic, socio-cultural and hermeneutic. Offered by the Comparative Literature Committee as Theories of Literature 17.402★. Spanish students will register in Spanish 38.402★, and will use Hispanic texts for exercises of practical application.

Prerequisite: Permission of the Comparative Literature Committee.

Evening division, Winter term: Three hours a week.

Spanish 38.415★

**Medieval Spanish Literature from the Origins through 1300**

A study of major works of Spanish literature from the earliest times through the thirteenth century.

Prerequisite: Spanish 38.210★ or 38.235 or permission of the Department. Students will normally have taken a literature course at the 300 level before enrolling in this course.

Not offered 1986-87.

Spanish 38.416★

**Medieval Spanish Literature, 1300-1500**

A study of major works of Spanish literature of the fourteenth and fifteenth centuries.

Prerequisite: Spanish 38.210★ or 38.235 or permission of the Department. Students will normally have taken a literature course at the 300 level before enrolling in this course.

Not offered 1986-87.

Spanish 38.420★

**Cervantes**

A study of Cervantes and his age, with particular reference to *Don Quijote*.

Prerequisites: Spanish 38.320★ and 38.321★ or permission of the Department.

Not offered 1986-87.

Spanish 38.430★

**Modern Spanish Novel**

Analysis and interpretation of works by major Spanish novelists from the beginnings of Realism in the nineteenth century up to the Civil War in 1936.

Prerequisites: Spanish 38.330★ and 38.331★, or permission of the Department.

Not offered 1986-87.

Spanish 38.431★

**Contemporary Spanish Novel**

Analysis and interpretation of works by major Spanish novelists from the Civil War to the present.

Prerequisites: Spanish 38.330★ and 38.331★ or permission of the Department.

Day division, Fall term: Three hours a week.

*A. López-Fernández*

Spanish 38.435★

**Modern Spanish Drama**

Analysis and interpretation of works by major Spanish playwrights of the nineteenth and early twentieth centuries, together with study of related dramatic theory.

Prerequisites: Spanish 38.330★ and 38.331★ or permission of the Department.

Not offered 1986-87.

Spanish 38.436★

**Contemporary Spanish Drama**

Analysis and interpretation of works by major Spanish playwrights from the Civil War to the present, together with study of related dramatic theory.

Prerequisites: Spanish 38.330★ and 38.331★ or permission of the Department.

Not offered 1986-87.

Spanish 38.440★

**Modern Spanish Poetry**

A study of Spanish poetry and poetics of the nineteenth and early twentieth centuries.

Prerequisites: Spanish 38.330★ and 38.331★ or permission of the Department.

Not offered 1986-87.

Spanish 38.441★

**Contemporary Spanish Poetry**

A study of Spanish poetry and poetics from the Generation of 1927 to the present.

Prerequisites: Spanish 38.330★ and 38.331★ or permission of the Department.

Not offered 1986-87.

Spanish 38.460★

**Twentieth-Century Spanish-American Novel I**

Analysis and interpretation of works by major Spanish-American novelists of the first half of the twentieth century. The regionalistic novel of social realism, including novels of the Mexican Revolution, the pampa, the jungle and the Andes.

Prerequisites: Spanish 38.350★ and 38.351★ or permission of the Department.

Not offered 1986-87.

Spanish 38.461★

**Twentieth-Century Spanish-American Novel II**

Analysis and interpretation of works by major Spanish-American novelists of the first half of the twentieth century. Novels of universal theme, especially reflecting artistic, philosophical and psychological concerns.

Prerequisites: Spanish 38.350★ and 38.351★ or permission of the Department.

Day division, Fall term: Three hours a week.

*R.L. Jackson*

Spanish 38.470★

**Twentieth-Century Spanish-American Poetry I**

A study of the principal tendencies in twentieth-century Spanish-American poetry with special emphasis on the modernist poets, the post-modernist *poetisas* and the creationism of Huidobro.

Prerequisites: Spanish 38.350★ and 38.351★ or permission of the Department.

Not offered 1986-87.

Spanish 38.471★

**Twentieth-Century Spanish-American Poetry II**

A study of the principal tendencies in twentieth-century Spanish-American poetry, with special emphasis on the social poetry of César Vallejo, Nicolás Guillén and Pablo Neruda.

Prerequisites: Spanish 38.350★ and 38.351★ or permission of the Department.

Day division, Winter term: Three hours a week.

*P.J. Roster*

Spanish 38.490

**Seminar on a Special Topic**

Designed for Honours students normally in their final year, or for Graduate students.

Not offered 1986-87.

Spanish 38.491★

**Seminar on a Special Topic**

Designed for Honours students normally in their final year, or for Graduate students.

Not offered 1986-87.

Spanish 38.492★

**Special Studies**

From time to time members of the Department form small groups to study certain problems or aspects of Spanish literature in greater depth than is possible in other courses. Interested students should consult the Department.

■ **Portuguese Course**

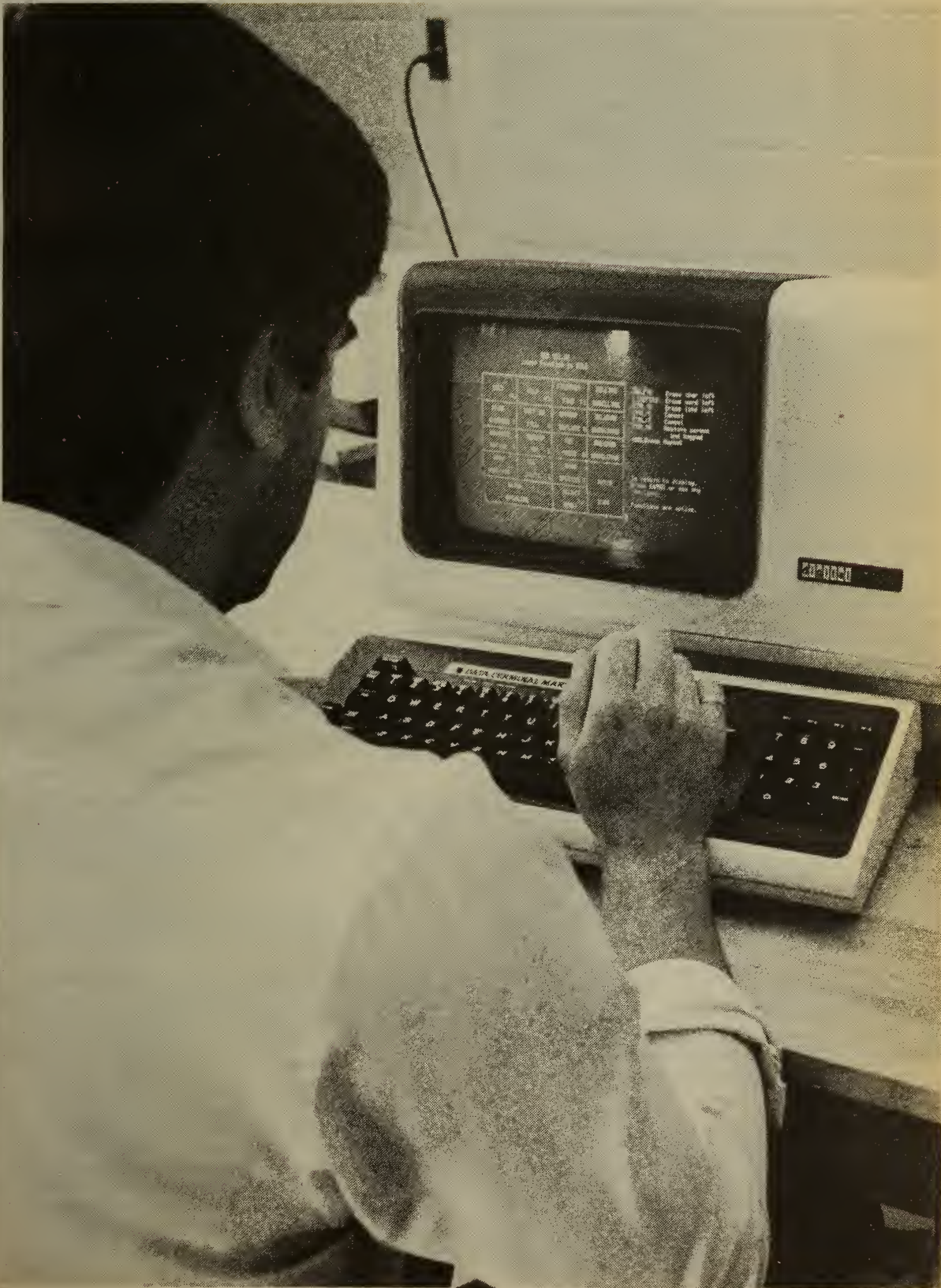
Portuguese 38.116

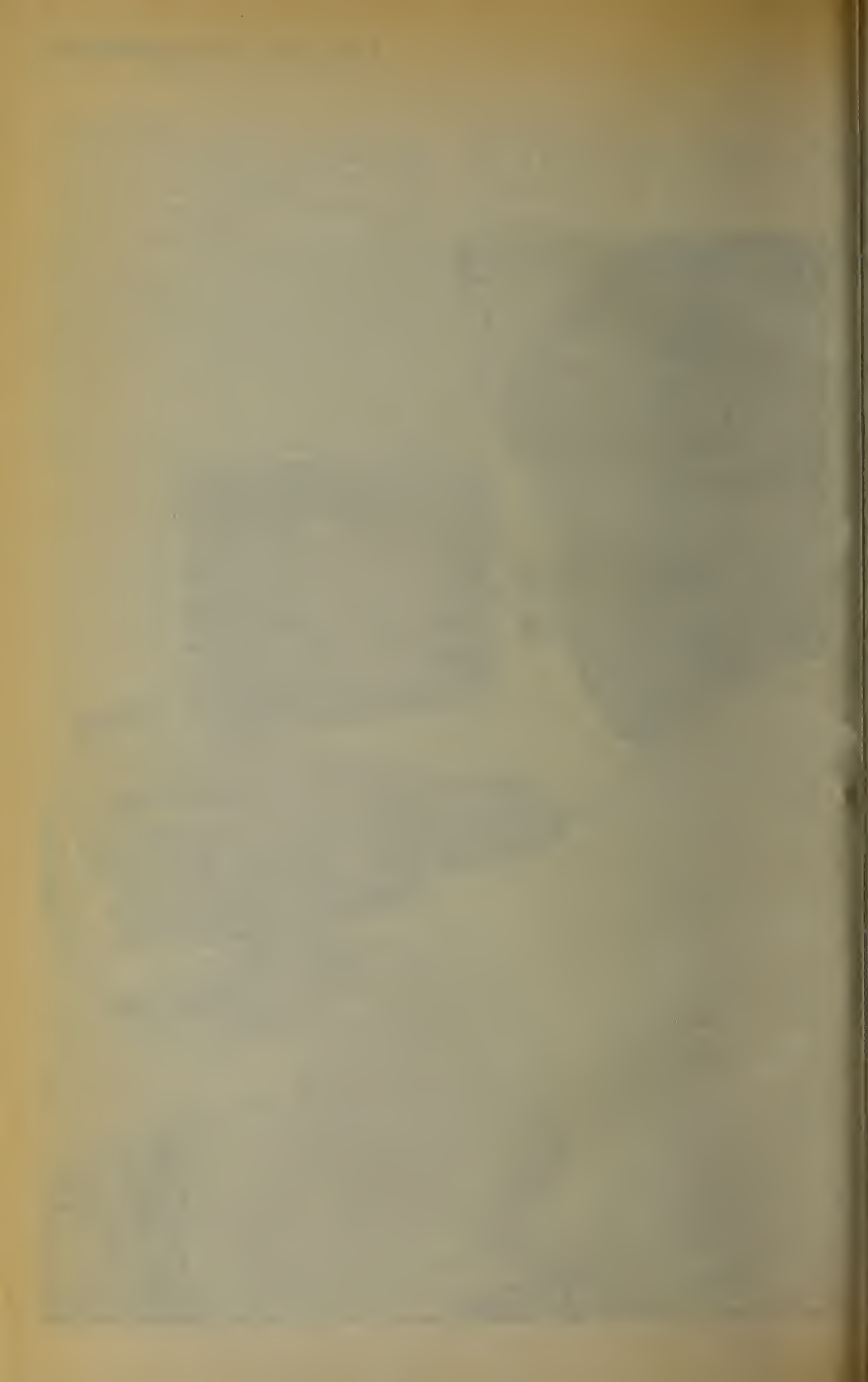
**Introductory Portuguese**

A course designed to provide the student with the fundamentals of Portuguese grammar, a basic vocabulary and speaking knowledge of Portuguese. Students who have taken courses in other Romance languages should make considerable progress.

Not offered 1986-87.









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## Officers of the Faculty

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*Dean*  
J.S. Riordon

*Associate Dean*  
G.A. Hartley

*Assistant Dean*  
J. Gordon Forth

*Faculty Registrar*  
Richard L. Fleming

### *Departmental Chairmen*

*Civil Engineering*  
A.P.S. Selvadurai

*Electronics*  
M.A. Copeland

*Mechanical and Aeronautical Engineering*  
R.J. Kind

*Systems and Computer Engineering*  
B.A. Bowen

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## Bachelor of Engineering Degree Program

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The Bachelor of Engineering degree is awarded on successful completion of a four-year program of studies with specialization in either Civil, Electrical, Mechanical or Computer Systems Engineering. In Civil, Electrical and Mechanical Engineering, the four-year program comprises common core material for two and one-half years, emphasizing fundamental mathematical, physical and engineering sciences followed by a further one and one-half years of study in one of the three program specializations. Additionally, in Electrical Engineering, in the Second term of Fourth year, further specialization is offered in three areas: computer systems engineering, general electrical and electronics.

Computer Systems Engineering shares a First year of common core material with the other three programs, a Second year of modified core, followed by two years of program specialization.

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## Licensing, Registration and Accreditation

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Licensing and registration are key words for doctors, for lawyers and for engineers. To practise engineering in Canada as a professional (P. Eng.), a person must be registered (licensed) with his or her provincial or territorial professional engineering association.

In 1965, the Canadian Council of Professional Engineers (C.C.P.E.) established the Canadian Accreditation Board (C.A.B.). This board develops standards for engineering degree programs in Canadian universities and monitors the application of these standards to ensure engineering graduates meet the educational requirements of the profession. Graduates from a C.A.B.-accredited program meet the educational requirements for registration in any one of the C.C.P.E.'s 12 federated associations. Most Carleton engineering graduates become registered and

licensed with the Association of Professional Engineers of the Province of Ontario (A.P.E.O.).

The Bachelor of Engineering degree programs at Carleton are accredited by the Canadian Accreditation Board.

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## Admission Requirements

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### Qualifying-University Year

The Ontario Secondary School Graduation Diploma with a 70 percent average must be presented on a minimum of 10 Advanced or Enriched Phase credits at Levels 3 and 4, including an appropriate preparation in Chemistry, Physics and Level 4 Mathematics.

### First Year

The Ontario Secondary School Honour Graduation Diploma with a minimum 65% average and including Functions, Calculus, Chemistry and Physics.

A student unable to meet the foregoing specific course requirements but otherwise admissible to Carleton University may be admitted, but will be required to satisfy the outstanding requirements at the Qualifying-University-year level.

### Enrolment Limitation

Applicants should note that in view of limited human and physical resources, meeting the admission requirements can only establish eligibility for selection to the Faculty of Engineering.

Each student offered admission to the Faculty of Engineering will have a place reserved in at least one of the specialized program options: Civil, Computer Systems, Electrical, or Mechanical Engineering; this will be confirmed in the letter offering admission. Transfer from one program option to another, requested after admission, will be permitted wherever possible. However, the Faculty of Engineering reserves the right to restrict enrolment in each of the foregoing program options.

### Advanced Standing

Applications for admission with advanced standing to the program leading to the Bachelor of Engineering degree will be evaluated on an individual basis.

Successful applicants will have individual academic subjects, completed with grades of at least C- or equivalent, evaluated for academic standing, provided the academic work has been completed at another university or degree-granting college or in another degree program at Carleton University.

The Faculty of Engineering does not normally accept, for transfer, courses that have been assessed as Science courses and that might be used towards the Fourth-year Engineering/Science elective requirements, since the final year of study must be completed in the Bachelor of Engineering program at Carleton University.

### Mature Matriculation

Persons who lack the normal entrance requirements as published in this calendar but who have been away from full-time studies for a minimum of two years and are 21 years of age or over, by December 31 of the year in which they wish to enrol, may receive consideration for admission to a degree program. See Admissions Section p. 33 for detailed information.

English Proficiency Requirements	Engineering Summer Report
The University policy governing applicants whose mother tongue is a language other than English is given on p. 29.	All students entering Second year of an Engineering program must submit a Summer Report, Engineering 99.200. The Summer Report is normally written on a topic drawn from the experiences gained by the student during summer employment. It should range from 3,000 words minimum to 5,000 words maximum and is due on the first day of classes for the Fall term.

Engineering Common Core						
First Year		Lectures and Tutorials		Laboratory and Problem Analysis		Course Weight
Term		Fall	Winter	Fall	Winter	
65.111★	Chemistry for Engineering Students	3	—	3	—	5
75.100	Introductory Physics	3	3	3	3	10
69.104★	Calculus for Engineering Students	4	—	—	—	5
69.114★	Algebra for Engineering Students	—	4	—	—	5
82.111★	Engineering Analysis	—	3	—	3	5
88.100	Engineering Graphics and Design	2	2	4	4	9
94.165	Computers in Engineering	3	3	1	1	8
Elective, Humanities or Social Sciences		3	3	—	—	7
		18	18	11	11	54
Second Year		Lectures and Tutorials		Laboratory and Problem Analysis		Course Weight
Term		Fall	Winter	Fall	Winter	
99.200	Engineering Summer Report	—	—	—	—	2
69.201	Intermediate Calculus	4	4	—	—	9
82.220★	Mechanics of Materials I	—	3	—	3	6
88.211★	Dynamics	3	—	3	—	6
88.230★	Introductory Fluid Mechanics	3	—	3/2	—	5
88.240★	Introductory Thermodynamics	—	3	—	3	6
88.270★	Elements of Materials Engineering	3	—	3	—	6
94.261★	Electrical Energy Conversion	—	3	—	3	6
94.265★	Computer Methods in Engineering	—	3	—	1/2	4
97.251★	Circuits and Signals	3	—	3	—	6
Elective, Humanities or Social Sciences		3	3	—	—	7
		19	19	10.5	9.5	63
Third Year, Fall Term		Lectures and Tutorials		Laboratory and Problem Analysis		Course Weight
69.375★	Mathematics	4		—		5
82.322★	Mechanics of Materials II	3		3		6
88.333★	Fluid Mechanics and Heat Transfer	3		3		6
97.357★	Electronics I	3		3		6
94.360★	Dynamics of Linear Systems	3		3		6
82.380★	Engineering Economics	3		—		4
		19		12		33

Note: See Elective Courses, p. 281.



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**Civil Engineering Program**


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Civil Engineering is primarily concerned with the planning, design, construction and maintenance of engineering works of all kinds, such as bridges, buildings, dams, airports, highways, railways, subways, harbours, water supply and sewage treatment systems. Civil engineers are employed in all levels of government, consulting offices, contracting firms and the supply industries in positions of wide technical and administrative responsibility.

At Carleton University, students in their final year and one-half in the Civil Engineering option will build upon the broad background in engineering developed in the common program of the first two and one-half years. The program of the Fourth year requires the students to study in the general areas of structural engineering, transportation and soil mechanics. The students are also encouraged to make use of all available elective courses to obtain as broad a background in Civil Engineering as is possible.

**Electives**

- 82.421★ Structural Analysis II
- 82.422★ Structural Design in Timber
- 82.426★ Design of Steel Structures
- 82.427★ Reinforced Concrete II
- 82.430★ Structural Planning in Architecture
- 82.431★ Foundation Engineering
- 82.434★ Transportation
- 82.437★ Hydraulics of Municipal Waste Water Systems
- 82.440★ Construction/Project Management
- 82.441★ Hydrology
- 82.450★ Computer Methods in Civil Engineering
- 88.411★ Strength Analysis
- 88.412★ Failure Analysis and Fracture Control
- 88.414★ Vibrations in Mechanical Systems
- 88.430★ Acoustics and Noise Control
- 88.443★ Energy Conversion and Power Generation
- 88.447★ Heating, Ventilating and Air Conditioning
- 88.473★ Engineering Materials
- 88.474★ Computer Integrated Manufacturing Systems (CIMS)
- 94.304★ File Structures and Data Bases
- 94.415★ Engineering Management

Civil Third Year, Winter Term	Lectures and Tutorials	Laboratory and Problem Analysis	Course Weight
69.376★ or 69.352★ Mathematics	4	—	5
82.104★ Surveying			4 (Spring)
82.323★ Introductory Structural Analysis	3	3/2	5
82.324★ Introductory Structural Design	2	3/2	4
82.328★ Introductory Soil Mechanics and Engineering Geology	3	3/2	5
82.333★ Urban Planning	2	3/2	4
82.337★ Municipal Engineering	3	3/2	5
Elective, Humanities or Social Sciences	3	—	4
	20	7.5	32
			+4 (Spring)

**Note:**

Students are encouraged to take Engineering 82.104★ (Surveying) in either the First or Second year of their Engineering program. Lectures and field work three weeks at the end of the Winter term.

Civil Engineering, continued

Civil Fourth Year, Fall Term	Lectures and Tutorials	Laboratory and Problem Analysis	Course Weight
82.497 Fourth Year Project	—	5	3
82.420★ Structural Analysis I	3	3/2	5
82.423★ Reinforced Contrete I	3	3/2	5
82.425★ Design Structural Steel Components	3	3/2	5
82.428★ Geotechnical Engineering	3	3/2	5
One of:			
82.422★ Structural Design in Timber	2	3/2	4
82.440★ Construction/Project Management			
82.441★ Hydrology			
Free Elective (Note a)	3	—	4
	17	12.5	31

Note:  
(a) This course carries a typical elective course weight; actual weight used is the assigned weight of the course selected by each student.

Civil Fourth Year, Winter Term	Lectures and Tutorials	Laboratory and Problem Analysis	Course Weight
82.497 Fourth Year Project	—	5	3
82.429★ Highway Engineering	2	3/2	4
82.495★ Professional Practice Seminar	3	—	4
Three of:			
82.421★ Structural Analysis II	2	3/2	4
82.426★ Design of Steel Structures			
82.427★ Reinforced Concrete II			
82.430★ Structural Planning in Architecture			
82.431★ Foundation Engineering			
82.434★ Transportation			
82.437★ Hydraulics of Municipal Waste Water Systems	2	3/2	4
Elective, Engineering or Scientific	2	3/2	4
Free Elective	3	—	4
	16	12.5	31

Electrical Engineering Program

Electrical engineers are engaged in research, design and development associated with a wide variety of electrical apparatus and systems. Examples include electronics, circuit design and fabrication, communications, power systems, and the design and application of computers. Opportunities exist for electrical engineers in industry, government and education, as well as in private consulting.

At Carleton University, the first two and one-half years of the Engineering program provide a broad common background of technical fundamentals. The last year and one-half of electrical engineering concentrates primarily on electronics, electromagnetics, control and communications. In addition, Electrical Engineering students may further enhance their specialized knowledge by choosing Fourth-year Engineering electives in the areas of electronics, materials, systems and computing.

- Electives**
- 88.430★ Acoustics and Noise Control
  - 88.443★ Energy Conversion and Power Generation
  - 88.453★ An Introduction to Robotics
  - 88.474★ Computer Integrated Manufacturing Systems (CIMS)
  - 94.304★ File Structures and Data Bases
  - 94.310★ Systems Analysis
  - 94.320★ Industrial Engineering
  - 94.362★ Electric Power Circuits and Machines
  - 94.401★ Operating Systems
  - 94.405★ Discrete Simulation and its Applications
  - 94.415★ Engineering Management
  - 94.433★ Advanced Real-Time Programming
  - 94.445★ Discrete Time Systems
  - 94.457★ Introduction to the Architecture of Computer Systems



94.460★ Data Communications  
 94.481★ Software Engineering Project  
 94.485★ Computer Systems Design  
 97.452★ Microwave Circuits  
 97.455★ Telecommunication Circuits  
 97.459★ Communication Links

97.469★ Integrated Circuit Design and Fabrication  
 97.475★ Electronic Properties of Materials  
 97.476★ Digital Integrated Electronics  
 97.477★ Analog Integrated Electronics

For **Computer Science** electives see p. 64

Electrical Third Year, Winter Term	Lectures and Tutorials	Laboratory and Problem Analysis	Course Weight
69.376★ or 69.352★ Mathematics	4	—	5
94.303★ Real-Time Computing Systems	3	2	5
94.356★ Automatic Control Systems I	3	3/2	5
94.367★ Switching Circuits	3	3/2	5
97.354★ Electromagnetic Theory	3	—	4
97.359★ Electronics II	3	3	6
97.395★ Professional Practice Seminar	3	—	4
	22	8	34

Electrical Fourth Year, Fall Term	Lectures and Tutorials	Laboratory and Problem Analysis	Course Weight
94/97.497; 94/97.498 Engineering Project (Note a)	—	5	3
97.450★ Digital Electronic Circuit Design	2	3	5
Four of:			
94.451★ Communication Systems	3	3/2	5
94.461★ Microprocessor Systems	3	3/2	5
94.410★ Structured Programming	3	3/2	5
97.453★ Transmission Lines and Antennas	3	3/2	5
97.468★ Solid State Electronics	3	3/2	5
Free Elective (Note b)	3	—	4
	17	14	32

**Notes:**

(a) See course description to determine appropriate course number.

(b) This course carries a typical elective course weight; actual weight used is the assigned weight of the course selected by each student.

**Fourth Year, Winter Term**

Electrical General Stream	Lectures and Tutorials	Laboratory and Problem Analysis	Course Weight
94/97.497 Engineering Project	—	5	3
One of:			
94.445★ Discrete Time Systems	2	3/2	4
94.457★ Computer Architecture			
One of:			
97.476★ Digital Integrated Electronics	2	3	5
97.477★ Analog Integrated Electronics			
Engineering Elective	2	3/2	4
Engineering Elective	2	3/2	4
Elective, Engineering or Scientific	2	3/2	4
Free Elective	3	—	4
	13	14	28

Electrical Engineering, continued

Electrical Computer Systems Engineering Stream	Lectures and Tutorials	Laboratory and Problem Analysis	Course Weight
94.498 Engineering Project	—	5	3
94.401★ Operating Systems	3	—	4
94.457★ Computer Architecture	3	—	4
94.460★ Data Communications	3	3/2	5
One of:			
94.320★ Industrial Engineering	}	3/2	4
94.405★ Discrete Simulation			
94.445★ Discrete Time Systems			
Elective, Engineering or Scientific	2	3/2	4
Free Elective	3	—	4
	16	9.5	28

Electrical Electronics Stream	Lectures and Tutorials	Laboratory and Problem Analysis	Course Weight
97.498 Engineering Project	—	5	3
97.476★ Digital Integrated Electronics	2	3	5
97.477★ Analog Integrated Electronics	2	3	5
Two of:			
97.452★ Microwave Circuits	}	3/2	4
97.455★ Telecommunication Circuits			
97.459★ Communications Links			
97.469★ Integrated Circuit Design and Fabrication			
97.475★ Electronic Properties of Materials	2	3/2	4
Elective, Engineering or Scientific	2	3/2	4
Free Elective	3	—	4
	13	15.5	29

Mechanical Engineering Program

Mechanical Engineering by its nature is a highly diversified discipline, encompassing a range of activities from manufacturing processes and design to energy conversion and conservation. The main topic areas of the discipline are solid mechanics and materials, fluid mechanics and thermo-sciences which together provide the breadth necessary for the graduate mechanical engineer.

At Carleton University, students in their final year and one-half in the Mechanical Engineering option will build upon the broad background in engineering developed in the common core program of the first two and one-half years. In addition to the continued major emphasis on design, dynamics, thermodynamics and heat transfer, the student can choose elective courses that span a wide range of applied subjects like noise control, energy conversion and power generation, computer integrated manufacturing systems (CIMS), vehicle technology, aerodynamics and flight mechanics, automatic controls, etc., which reflect the wide range of interests of faculty members of the Department of Mechanical and Aeronautical Engineering. In addition, the final-year student completes a major project on a topic of current interest in mechanical and aeronautical engineering.

Electives

- 82.104★ Surveying
- 82.434★ Transportation
- 82.437★ Hydraulics of Municipal Waste Water Systems
- 88.406★ Vehicle Engineering I
- 88.407★ Vehicle Engineering II
- 88.411★ Strength Analysis
- 88.412★ Failure Analysis and Fracture Control
- 88.414★ Vibrations in Mechanical Systems
- 88.430★ Acoustics and Noise Control
- 88.432★ Fundamentals of Fluid Dynamics
- 88.435★ Fluid Machinery
- 88.437★ Mechanics of Flight
- 88.441★ Power Plant Analysis
- 88.443★ Energy Conversion and Power Generation
- 88.447★ Heating, Ventilating and Air Conditioning
- 88.453★ An Introduction to Robotics
- 88.464★ Finite Element Methods in Mechanical Engineering
- 88.473★ Engineering Materials
- 88.474★ Computer Integrated Manufacturing Systems (CIMS)
- 94.362★ Electric Power Circuits and Machines
- 94.415★ Engineering Management



*Mechanical Engineering, continued*

<b>Mechanical Third Year, Winter Term</b>	<b>Lectures and Tutorials</b>	<b>Laboratory and Problem Analysis</b>	<b>Course Weight</b>
69.376★ or 69.352★ Mathematics	4	—	5
88.302★ Machine Design and Practice	3	3	6
88.304★ Dynamics of Machinery	3	—	4
88.340★ Applied Thermodynamics	3	—	4
88.370★ Principles of Manufacturing Engineering	3	—	4
88.390★ Mechanical Engineering Laboratory I	—	6	5
Elective, Humanities or Social Sciences	3	—	4
	19	9	32

<b>Mechanical Fourth Year, Fall Term</b>	<b>Lectures and Tutorials</b>	<b>Laboratory and Problem Analysis</b>	<b>Course Weight</b>
88.497 Engineering Project	—	5	3
88.403★ Mechanical Systems Design	3	3	6
88.446★ Heat Transfer	3	—	4
88.491★ Mechanical Engineering Laboratory	1	5	5
One of:			
88.411★ Strength Analysis	3	—	4
88.414★ Vibrations in Mechanical Systems			
Elective, Engineering (Note a)	2	3/2	4
Elective, Engineering or Scientific	2	3/2	4
	14	16	30

Note:

(a) This course carries a typical elective course weight; actual weight used is the assigned weight of the course selected by each student.

<b>Mechanical Fourth Year, Winter Term</b>	<b>Lectures and Tutorials</b>	<b>Laboratory and Problem Analysis</b>	<b>Course Weight</b>
88.497 Engineering Project	—	5	3
88.452★ Mechanical Feedback Control Systems	3	—	4
88.495★ Professional Practice Seminar	3	—	4
Elective, Engineering	2	3/2	4
Elective, Engineering	2	3/2	4
Elective, Engineering	2	3/2	4
Elective, Engineering or Scientific	2	3/2	4
	14	11	27

## Computer Systems Engineering Program

Computer Systems Engineering is concerned with the design and implementation of integrated computer systems to solve practical problems in areas such as communications, process control and information storage, transfer and display. Examples include computer network design, remote distributed control of pipeline pumping stations, telephone switching systems, and videotex data storage/transmissions/display systems.

At Carleton, the Computer Systems Engineering program begins in Second year. The First year, and to some extent the Second, which constitutes a modified core, provide a background of technical fundamentals. While the Third and Fourth years have some commonality with the Electrical Engineering program, they concentrate primarily on electronics and digital logic, computer systems organization and design, software and systems engineering. In addition students may take a number of electives either to broaden their background or to provide further specialized knowledge.

## Suggested Electives

*Engineering*

- 82.220★ Mechanics of Materials I
- 88.230★ Introductory Fluid Mechanics
- 88.270★ Elements of Materials Engineering
- 88.453★ An Introduction to Robotics
- 94.405★ Discrete Simulation and Its Applications
- 94.415★ Engineering Management
- 94.433★ Advanced Real-Time Programming
- 94.445★ Discrete Time Systems
- 94.457★ Introduction to the Architecture of Computer Systems
- 94.481★ Software Engineering Project
- 97.354★ Electromagnetic Theory

- 97.452★ Microwave Circuits
- 97.453★ Transmission Lines and Antennas
- 97.459★ Communications Links
- 97.468★ Solid State Electronics
- 97.469★ Integrated Circuit Design and Fabrication
- 97.475★ Electronic Properties of Materials
- 97.476★ Digital Integrated Electronics
- 97.477★ Analog Integrated Electronics

*Mathematics, Physics and Computer Science*

- 69.384★ Data Structures and Algorithm Analysis
- 70.483★ Topics in Applied Logic
- 70.484★ Design and Analysis of Algorithms
- 75.364★ Modern Physics
- 95.207★ Programming Language Concepts
- 95.301★ Concurrent Programming
- 95.407★ Applied Artificial Intelligence

*Business, Economics and Law*

- 42.101★ Principles of Financial Accounting
- 42.102★ Management Accounting
- 42.200 Intermediate Accounting
- 42.250★ Introduction to Business Finance
- 42.311★ Micro-Organizational Behaviour
- 43.201★ Introduction to Microeconomic Theory and Analysis
- 43.356★ Introduction to Labour Economics
- 43.357★ Introduction to Industrial Relations
- 43.430 Industrial Organization and Public Policy
- 51.231★ Business Law I
- 51.232★ Business Law II
- 51.321 Company Law
- 51.333 Torts
- 51.352★ Communications Law II

Computer Systems  
Second YearLectures and  
TutorialsLaboratory and  
Problem AnalysisCourse  
Weight

Term	Fall	Winter	Fall	Winter	
99.200 Engineering Summer Report	—	—	—	—	2
69.201 Intermediate Calculus	4	4	—	—	9
88.211★ Dynamics	3	—	3	—	6
88.240★ Introductory Thermodynamics	—	3	—	3	6
94.202★ Advanced Programming Techniques	—	3	—	2	5
94.261★ Electrical Energy Conversion	—	3	—	3	6
94.265★ Computer Methods in Engineering	—	3	—	1/2	4
94.303★ Real-Time Computing Systems	3	—	2	—	5
97.251★ Circuits and Signals	3	—	3	—	6
Elective, Humanities or Social Sciences (Note a)	3	3	—	—	7
Elective, Engineering or Scientific	2	—	3/2	—	4
	18	19	9.5	8.5	60

## Note:

(a) This course carries a typical elective course weight; actual weight used is the assigned weight of the course selected by each student.



## Computer Systems Engineering, continued

Computer Systems Third Year	Lectures and Tutorials		Laboratory and Problem Analysis		Course Weight
	Fall	Winter	Fall	Winter	
69.375★ Mathematical Methods I	4	—	—	—	5
94.304★ File Structures and Data Bases	3	—	—	—	4
94.360★ Dynamics of Linear Systems	3	—	3	—	6
94.367★ Switching Circuits	—	3	—	3/2	5
94.395★ Professional Practice Seminar	—	3	—	—	4
94.401★ Operating Systems	—	3	—	—	4
94.433★ Advanced Real-Time Programming	—	2	—	3	5
94.461★ Microprocessor Systems	3	—	3/2	—	5
97.357★ Electronics I	3	—	3	—	6
97.359★ Electronics II	—	3	—	3	6
One of:					
69.352★ Engineering Statistics }	—	4	—	—	5
69.376★ Mathematical Methods II }					
82.380★ Engineering Economics	3	—	—	—	4
	19	18	7.5	7.5	59

Computer Systems Fourth Year	Lectures and Tutorials		Laboratory and Problem Analysis		Course Weight
	Fall	Winter	Fall	Winter	
94/97.498 Engineering Project (Note a)	—	—	5	5	6
94.451★ Communication Systems	3	—	3/2	—	5
94.457★ Introduction to the Architecture of Computer Systems	—	3	—	—	4
94.460★ Data Communications	—	3	—	3/2	5
94.480★ Software Engineering	3	—	3/2	—	5
94.485★ Computer Systems Design Laboratory	—	2	—	4	5
97.450★ Digital Electronic Circuit Design	2	—	3	—	5
97.476★ Digital Integrated Electronics	—	2	—	3	5
Elective, Engineering or Scientific	2	2	3/2	3/2	8
Elective, Free	3	—	—	—	4
	13	12	12.5	15	52

Note:

(a) See course description to determine appropriate course number.

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**Qualifying University-Year**


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Term	Lectures and Tutorials		Laboratory and Problem Analysis	
	Fall	Winter	Fall	Winter
65.010 Introductory Chemistry	3	3	3	3
69.006★ Functions and Relations	4	—	—	—
69.007★ Introductory Calculus	—	4	—	—
75.010 Pre-University Physics	3	3	3	3
Elective* (full-course equivalent)	3	3	3	3
Elective* (full-course equivalent)	3	3	3	3
Hours per week	16	16	12	12

\*The hours per week for electives will vary depending upon the electives chosen, which must be selected from courses approved for a Qualifying-University-year Science program (pp. 328-329).

**Accelerated Progress**

Qualifying-University-year (Engineering) students who pass all required courses in Qualifying-University year, including electives, with a *B-* or 7.0 average, may have their programs assessed for the purpose of reducing the number of courses required to graduate from the Bachelor of Engineering program. For example, approved humanities/social sciences electives taken as Qualifying-University-year electives, which are at a First-year level or higher, may be used to fulfil program requirements in the Bachelor of Engineering program. It is necessary for Qualifying-University-year students to meet the promotion requirements of the Qualifying-University year, as well as the Accelerated Progress requirements, in order to be considered for Accelerated Progress.

**Academic Standing and Promotion**

Students in Qualifying-University year are permitted to write supplemental or grade-raising examinations or to enrol in Summer-session courses, in a maximum of two credits or equivalent.

To achieve satisfactory academic standing the student must, at the end of August:

- (a) have received credit in Chemistry 65.010, Mathematics 69.006★, 69.007★ and Physics 75.010, and
- (b) have a grade-point average of 3.4 in all courses completed in the year.

Students who achieve satisfactory academic standing are promoted to First-year Engineering.

Students who fail to achieve satisfactory academic standing forfeit their undergraduate status in the Faculty of Engineering.

The Qualifying-University year is not considered as part of the Bachelor of Engineering program for the purpose of assessment of academic standing in the program.

**General Information**

The study of Engineering is necessarily structured. Upper-year courses are built on the material studied in previous years. The program consists of a consecutive sequence of four years, each of which comprises the two terms of the Fall/Winter session. Regulations governing promotion are detailed below.

With few exceptions, courses in the Faculty of Engineering are offered only in the Fall/Winter session and only in the Day division. However, a significant portion of the Engineering program involves courses in the Faculties of Science, Arts and Social Sciences; many of these courses are offered in the Summer session and in the Evening division of the Fall/Winter session.

It should be noted that in all courses with computer programming assignments students usually find it necessary to be on campus at other than scheduled periods to make use of computing facilities.

When a student first registers in the Faculty of Engineering, he or she is assigned a faculty adviser who

provides counselling of an academic nature and advises on any problems the student may have. Students are encouraged to consult with their faculty advisers on matters in these areas.

**Course Load**

The course requirements for each year of the program are tabulated on pp. 272-279 along with the course weight and hours for each course. Where the fraction  $3/2$  appears in the laboratory and problem analysis column, it means a three-hour period is scheduled on alternate weeks; the fraction  $1/2$  refers to a one hour workshop on alternate weeks.

During the Fall/Winter session, the normal course load for a full-time student is all of the courses for the program year in which the student is registered. The normal course load for Fourth-year students is the lesser of the courses of the program year or the number of courses required to satisfy graduation requirements. In order to enrol in a course, a student must have satisfied the prerequisites for that course or have permission of the department offering the course. Any student who is



enrolled in a course but who has not satisfied the prerequisites for that course is required to obtain approval or may be required to withdraw from the course.

Except for those Fourth-year students with fewer than five credits outstanding in their program, full-time students must, after the last date for withdrawal from courses in each term, remain enrolled in a minimum of five credits, part-time students in a maximum of two credits. In exceptional circumstances, and on the recommendation of a departmental chairman or the Registrar, the Dean of Engineering may waive this regulation where it is deemed to be in the best interest of the student and of the Faculty of Engineering.

Students with a cumulative weighted grade-point average of at least 5.0 may enrol in a maximum of one credit in addition to those of the program year in which they are registered.

Students may enrol in non-elective courses from a higher program year than the one in which they are registered if:

- (a) they have C- or better in the stated prerequisites for such courses; and
- (b) they are concurrently enrolled in all outstanding non-elective courses from the program years preceding the one in which they are registered; and
- (c) they have the permission of the department that offers the course.

During the Summer session, the maximum course load is two credits.

### Elective Courses

The program course requirements tabulated on pp. 272-279 include humanities or social sciences electives. In the First term of Third year the elective has been replaced by the compulsory course Engineering 82.380★. Fourth year includes electives from one or more of the categories listed below: a free elective can be chosen from any of the three categories. Where an elective course is shown in the tables with lectures two hours a week and laboratory/problem analysis three hours alternate weeks, the requirement is equally satisfied by a course having three hours lectures a week and no laboratory/problem analysis.

**1. Engineering Electives:** All undergraduate courses bearing the departmental numbers of the Faculty of Engineering (i.e. 82, 88, 94, 97) are approved Engineering electives. Graduate courses bearing those numbers may be taken as electives with the approval of the chairman of the department offering the course.

**2. Scientific Electives:** Courses in this classification include the physical sciences, mathematical sciences, computer science and related courses. Approved scientific electives are listed in the booklet, *A Guide to the Engineering Program*, available from the Divisional Registrar's Office.

**3. Humanities or Social Sciences Electives:** Courses in this classification must be chosen from among those listed as approved in the booklet, *A Guide to the Engineering Program*, available from the Divisional Registrar's Office.

### Student Responsibility

The student is responsible for knowing the regulations of the Faculty of Engineering and for complying with them. Any exceptions to the regulations must be approved, in writing, by the Faculty of Engineering Committee on Admission and Studies. Routine approval of a records form (for example, a registration contract or a course

change form) does not constitute approval of an exception.

It is also each student's responsibility to establish contact with his or her faculty adviser.

### Grading System

Standing in courses will be determined by the Faculty and will be shown by alphabetical grades. The grades used, with their corresponding grade points are as follows:

A+	12	B+	9
A	11	B	8
A-	10	B-	7
C+	6	D+	3
C	5	D	2
C-	4	D-	1

Passed Supplemental Examination: D-

Each course is assigned a course weight, shown on the charts on pp. 272-279. The weighted grade points achieved in a course are the product of the course weight and the grade points for that course. The cumulative weighted grade-point average is the sum of weighted grade points divided by the sum of course weights, for all courses for which the student has received a grade in the program of studies.

Where regulations refer to one credit, it is understood that two half-course credits are in all respects equivalent to one credit. Any course in the Engineering program with a weight of seven or greater is one credit; any course with a weight of six or less is a half-course credit. The sole exception is the Fourth-year Engineering Project, which is designated as one credit with a weight of six.

Notations to represent special circumstances are as follows:

#### Aeg

Aegrotat standing is a pass standing granted despite absence from the final examinations. It may be granted by the Engineering Faculty Committee on Admission and Studies only in response to a student's written request. Aegrotat standing will be granted only in exceptional circumstances and if the term work has been of high quality.

#### F

Failure; no academic credit.

#### FNS

Failure, but with supplemental privileges withdrawn because of unsatisfactory term work or an unacceptably low mark in the examination. No academic credit.

#### Wdn

Withdrawn in good standing; no academic credit.

#### Abs

Absent from formally scheduled final, special final, supplemental and special supplemental examinations where the necessary term work has been completed. No supplemental privileges. No academic credit.

#### Def

Students who are absent from final examinations or who are unable to complete their course work for medical or compassionate reasons may apply to the Engineering

Faculty Committee on Admission and Studies for deferred examination privileges. Such applications must:

1. be made in writing to the Engineering Faculty Registrar's Office not later than *one week* after the date of the examination; and
2. be fully supported in the case of illness by a medical certificate or appropriate documents in other cases.

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### Grade-Raising Examinations

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The Faculty of Engineering does not recognize grade-raising examinations (special supplementals). Students enrolled in the Bachelor of Engineering degree program may not take grade-raising examinations in any course that forms part of their program.

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### Academic Standing, Promotion and Continuation

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#### Supplemental Examination Privileges

Students who are granted supplemental examination privileges are permitted to write supplemental examinations in any courses from the Fall/Winter session just completed for which they have received a grade of *F*. Such students may register in Summer session in addition to applying to write one or more supplemental examinations in August.

Supplemental examinations for courses in the Faculty of Engineering are scheduled during the August supplemental period. For certain Fall-term half-credit courses in the Faculties of Science, Arts, and Social Sciences, supplemental examinations are scheduled only in the February examination period.

The requirements for supplemental examination privileges are based on final grades only, for all courses taken in the Fall/Winter session just completed. The following are the minimum requirements for full-time students:

In First Year, not repeating the year:  
three credits passed and 135 weighted grade points.

In Second, Third and Fourth years, not repeating the year:  
three credits passed and 150 weighted grade points.

Repeating any year:  
four credits passed and 200 weighted grade points.

For part-time students, eligibility for supplemental examinations will be assessed at the end of each group of three credits and based upon the final grades achieved in those courses. Number of passed courses and weighted grade points required are pro-rated to one-half of those listed above.

Students who fail to meet the minimum requirements for the granting of supplemental examination privileges are also ineligible to register in Summer session and forfeit their undergraduate status in the Faculty of Engineering.

#### Summer Session

Students are permitted to enrol in a maximum of two credits in the Summer session. Courses taken by Engineering students in the Summer session may be used to complete program-year requirements for the previous Fall/Winter-session; such courses count towards both year promotion and program-year completion, and are

reflected in the year's course count, the year's weighted grade-point average, and in the cumulative weighted grade-point average.

Summer session courses that are not part of program-year requirements for the previous Fall/Winter-session count neither towards promotion from nor completion of that year's program, nor are they reflected in that year's course count. While such courses taken during a Summer session may be used to fulfil future program requirements, these courses will not affect the promotion decision for either the current year or for any future year. Such courses will count only towards degree program completion, and will be reflected only in the cumulative weighted grade-point average.

#### Academic Standing

Academic standing for the academic year is determined, for full-time students, at the beginning of September. Standing is based on grades achieved during the previous 12-month period. This includes all passing grades for the Fall/Winter session, supplemental examination results in Fall/Winter session courses, and final grades in Summer session courses which are relevant to the previous Fall/Winter session.

The following are the minimum requirements for satisfactory academic standing for full-time students:

In First year, not repeating the year:  
four credits passed and 180 weighted grade points.

In Second, Third and Fourth years, not repeating the year:  
four credits passed and 200 weighted grade points.

Repeating any year:  
five credits passed and 250 weighted grade points.

For part-time students, academic standing is determined at the completion of each group of three credits, using the appropriate criterion above. Number of passed courses and weighted grade points required are pro-rated to one-half of those listed above.

#### Discredits

Exclusive of the first year of registration in the Engineering program, students may accumulate failing grades (*F*, *FNS*, *Abs*), supplemental examinations, repeated courses, and replacement courses equivalent to no more than three credits. However, discredits earned while repeating First year will be counted. A failed full-credit course followed by a failed supplemental examination counts as two discredits. Students who accumulate three full-course discredits or the equivalent forfeit their undergraduate status.

#### Promotion

Students who achieve satisfactory academic standing are promoted to the next year of the program, except that:

1. for promotion to Third year, credit is required for all non-elective courses of First year; and
2. for promotion to Fourth year, credit is required for all non-elective courses of Second year.



Students who fail to achieve satisfactory academic standing are placed on academic probation and may repeat the year just completed; the following conditions apply:

1. Mandatory courses in which at least B-, and optional courses in which at least C-, grades were achieved in the failed year, need not be repeated;
2. In a repeated year, the course load is either five or six credits and must be approved by the Dean of Engineering or the Registrar.

Exceptions:

1. Students failing in a repeated year forfeit their undergraduate status;
2. Students who have previously been on academic probation forfeit their undergraduate status;
3. Students who accumulate more than 3.0 discredits in their program, exclusive of their First year, forfeit their undergraduate status.

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## Graduation

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In order to fulfil the minimum graduation requirements for the degree of Bachelor of Engineering, a candidate must:

1. have completed the requirements of the First to Fourth years, inclusive.
2. have a cumulative weighted grade-point average of at least 3.4.
3. have achieved satisfactory academic standing in the final year of study.
4. have a weighted grade-point average of 3.4 on the requirements of the Fourth year program.
5. be recommended for graduation by the Faculty of Engineering.

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## Degrees with Distinction

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For students who entered the Engineering program after July 1, 1984, two classes of degrees may be awarded to students with exceptional academic standing.

Upon recommendation of the Faculty of Engineering, the notation "with High Distinction" may be made on the academic record of a candidate for the degree of Bachelor of Engineering. To be considered for recommendation, the candidate is expected to obtain a weighted grade-point average of at least 10.0 in the combined course requirements of the Fourth year and the Winter term of Third year of that student's Program Option; in addition, the student must present a weighted grade-point average of at least 8.0 in the course requirements of the First to Fourth years, inclusive. Any candidate with a failure, supplemental, examination, repetition or replacement course will not normally be considered for a degree "with High Distinction."

Upon recommendation of the Faculty of Engineering, the notation "with Distinction" may be made on the academic record of a candidate for the degree of Bachelor of Engineering. To be considered for this recommendation, the candidate is expected to obtain a weighted grade-point average of at least 9.0 in the combined course requirements of the Fourth year and the Winter term of Third year of that student's Program Option; in addition, the student must present a weighted grade-point average

of at least 7.0 in the course requirements of the First to Fourth years, inclusive. Any candidate with a failure, supplemental examination, repetition or replacement course in more than a total of two credits will not normally be considered for a degree "with Distinction."

For students who registered in the Engineering program prior to July 1, 1984, the numerical requirements for eligibility are:

1. "with High Distinction": a weighted grade-point average of at least 9.0 in the course requirements of the final year of study; a weighted grade-point average of at least 7.8 in the course requirements of the First to Fourth years, inclusive.
2. "with Distinction": a weighted grade-point average of at least 7.8 in the course requirements of the final year of study; a weighted grade-point average of at least 6.6 in the course requirements of the First to Fourth years, inclusive.

*Note:*

In addition to these numerical requirements, students must also fulfil the detailed requirements listed under the "Graduation" section, see above.

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## Graduate Programs

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Programs of study are offered by the Faculty of Engineering leading to the degrees of Master of Engineering and Doctor of Philosophy in Aeronautical, Civil, Electrical and Mechanical Engineering; to the degree of Master of Engineering in Materials Engineering, and, in co-operation with the Faculty of Science, to the degree of Master of Science in Information and Systems Science. In co-operation with the School of Computer Science, the Department of Mathematics and Statistics, and the University of Ottawa, the Faculty offers a joint program leading to the degree of Master of Computer Science. Joint programs in Civil, Electrical and Mechanical Engineering at both Masters and Ph.D. levels are offered in conjunction with the University of Ottawa. For further details, contact the Graduate Secretary, Faculty of Engineering, or refer to the Faculty of Graduate Studies and Research Calendar.

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## Academic and Professional Clubs and Societies

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The following clubs and societies operating on the campus serve to broaden and enrich the curriculum and to offer students social activity and friendship related to their intellectual interests. The societies listed here are particularly pertinent for students registered in the Faculty of Engineering.

*The American Society of Mechanical Engineers — Student Section* sponsors field trips, films and speakers on industrial and other aspects of mechanical engineering.

*The Canadian Aeronautics and Space Institute* meets monthly to provide a forum for discussion and dissemination of information on topics relating to aeronautics and space activities. Faculty Adviser: Dr. R.J. Kind.

*The Canadian Society for Civil Engineering* promotes technical activities related to all areas of civil engineering, such as building design and construction, geotechnical engineering and transportation. The activities of this group are designed to enhance and broaden the student's

appreciation of the profession. To this effect, speakers are brought to the Department of Civil Engineering to give seminars on current topics and visits are organized to construction sites and other facilities where civil engineering has played an important role. Faculty Adviser: Dr. A.O.A. Halim.

*The Carleton Student Engineering Society (C.S.E.S.)* is open to all members of the University who are enrolled in Engineering courses. Through its academic and social activities, C.S.E.S. acts as a liaison between the students and the governing bodies of the University and promotes professional interest, high standards and a spirit of mutual assistance in the study of engineering.

*The Institute of Transportation Engineers (I.T.E.)* is an international organization of professional transportation engineers. The I.T.E. is organized into Districts, of which Canada is one, and into Sections, of which Ottawa is one. For students in transportation, there are Student Chapters, one of which is located on campus. The Chapter is closely associated with the local Section. Joint meetings are held once a month in Ottawa. The meetings have both a technical and social content. Membership in the Student Chapter is an excellent way of becoming part of the profession of transportation engineering. Students enrolled in the transportation program are eligible to join. Faculty Adviser: Professor John P. Braaksma.

The Student Branch of the *Institute of Electrical and Electronics Engineers (I.E.E.E.)* organizes a series of events of both professional and general interest. Among these activities are an annual "Computer Faire", an employment workshop for upper-year students, an annual "papers" night and student-faculty get-togethers. Faculty Adviser: Professor C.H. Chan.



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## Officers of Instruction

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*Chairman*  
A.P.S. Selvadurai

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G.E. Bauer  
W.H. Bowes  
J.P. Braaksma  
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A.M. Khan  
A.P.S. Selvadurai  
G.T. Suter

*Associate Professors*  
G.A. Hartley  
J.J. Salinas

*Assistant Professors*  
A.O.A. Halim  
N.M. Holtz  
A.G. Razaqpur

*Adjunct Professors*  
M.C. Allen  
K.T. Law  
G.Y. Sebstyan  
W.E. Wright

*Sessional Lecturers*  
R. Condie  
R. Droste  
P. Pilon

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## Courses Offered

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### Engineering 82.104★

#### Surveying

Surveying principles and practice; measurements of distance, difference in elevation, angles and directions; theory, use and adjustments of principal surveying instruments; theory of errors and weighted measurements; engineering surveys, profile, cross sections, earth-work horizontal and vertical curves; use of rectangular coordinates in surveying; area computation by surveying methods; handling of equipment, note-keeping, and surveying procedures are stressed in the field work.

Text: Brinker, *Elementary Surveying*.

Lectures and field work three weeks at the end of the Winter term.

G. Bauer, J.J. Salinas

### Engineering 82.111★

#### Engineering Analysis

Three dimensional statics with vectors. Definition of force and moment. Resultant of a system of forces. Force components. Equilibrium. Applications to trusses, frames and machines. Shear and bending moment diagrams for beams. Introduction to fluid statics. Friction and wedges. Moments of inertia.

Text: Meriam, *Engineering Mechanics, Volume 1, Statics, SI/English version*.

One term: Lectures three hours a week, tutorials and problem analysis, three hours a week.

N.M. Holtz, A.G. Razaqpur

### Engineering 82.220★

#### Mechanics of Materials I

Pin-jointed trusses: forces and stresses in members, safety factor, introduction to design, bolted and riveted connections. Bending and shearing stresses in beams by approximate methods. Stresses in thin-walled cylinders due to internal pressure and torsion. Mohr's circle for stress. Stress-strain relations. Bending stresses in beams. Circular members in torsion. Stress-strain relations in shear. Shearing stresses in beams. Mohr's circle for strain. Introduction to electric resistance strain gauges, principal stresses from strain rosette data. Ultimate loads in bending and torsion. Thermal stresses. Buckling of columns.

Prerequisite: Engineering 82.111★.

Text: Bowes, Russell and Suter, *Mechanics of Engineering Materials*.

One term: Lectures three hours a week, problem analysis and laboratory three hours a week. Offered both terms.

W.H. Bowes, A.G. Razaqpur

### Engineering 82.322★

#### Mechanics of Materials II

Torsion bars and helical springs, stresses due to torque on non-circular sections, membrane analogy, shear flow, elastic-plastic torsion. Bending and shear stresses in beams of non-symmetrical cross-sections. Properties of areas; principal axes, Mohr's circle of inertia, shear centre. Columns having partial end-constraint, eccentrically loaded columns, beam-columns. Energy methods, minimum potential energy, Castigliano's theorems. Fatigue: S-N curve, strength reduction factors, loads of varying amplitude. Failure theories.

Prerequisite: Engineering 82.220★.

Text: Bowes, Russell and Suter, *Mechanics of Engineering Materials*.

Fall term: Lectures three hours a week, problem analysis and laboratory three hours a week.

A.G. Razaqpur, G.T. Suter

### Engineering 82.323★

#### Introductory Structural Analysis

Review of plane statics; analysis of statically determinate structures; strain energy, principle of virtual work; influence lines, structural deflections and deformations; degree of indeterminacy and stability of structural systems; analysis of hyperstatic structures; elastic instability of structural elements.

Prerequisite: Engineering 82.322★.

Winter term: Lectures three hours a week, problem analysis three hours alternate weeks.

N.M. Holtz

### Engineering 82.324★

#### Introductory Structural Design

An introduction to structural design intended to acquaint the student with the behaviour of typical engineering materials such as steel, concrete and timber. The design process; codes and standards; structural loading; working stress and limit states design; load combinations; steel as a structural material; design of tension and compression members in steel.

Prerequisite: Engineering 82.322★.

Texts: Adams, Krantz and Kulak, *Limit States Design In Structural Steel — SI Units; National Building Code of Canada and its Supplement, 1980*.

Winter term: Lectures two hours a week, laboratory and problem analysis two hours a week.

M.C. Allen

Engineering 82.328★

**Introductory Soil Mechanics and Engineering Geology**  
Origin and classification of soils and rocks. Character of natural soil deposits. Soil water. Seepage and permeability of soils. Principle of effective stress. Stress-deformation and strength characteristics of soils and rocks. Consolidation characteristics of soils. Stress distribution in earth masses. Laboratory testing. (Also listed as Geography 45.424★ and Geology 67.417★.)

Prerequisite: Third-year registration.

Winter term: Lectures three hours a week, laboratory three hours alternate weeks.

A.P.S. Selvadurai

Engineering 82.333★

**Urban Planning**

A systematic approach to urban planning. Urbanization in Canada; urban sprawl; data collection; forecasting; standards; space requirements; land use; zoning; transportation; land development; site selection; land capability; layout; evaluation; housing; urban renewal and new towns. (Also listed as Geography 45.433★.)

Prerequisite: Third-year registration.

Winter term: Lectures two hours a week, problem analysis three hours alternate weeks.

J.P. Braaksma

Engineering 82.337★

**Municipal Engineering**

Introduction to fundamentals of municipal engineering. City management; permits and approvals; water supply, treatment and distribution; sewage collection, treatment and disposal; solid waste management; traffic engineering; protective services.

Prerequisite: Third-year registration.

Winter term: Lectures three hours a week, problem analysis three hours alternate weeks.

J.P. Braaksma

Engineering 82.380★

**Engineering Economics**

Resources and the role of the engineer. Fundamental economic and problem-solving concepts. Interest (discounting) formulas. Economic comparison of alternatives. Decision-making among alternatives. Financial analysis. Analysis of public works. Accounting, depreciation and income tax considerations. Effects of inflation, sensitivity analysis and industrial practices. Economic decisions. Decision-making under uncertainty. Introduction to estimation and forecasting techniques.

Prerequisite: Third-year registration.

Text: Riggs, et al., *Essentials of Engineering Economics, First Canadian Edition*.

Fall term: Lectures three hours a week.

A.M. Khan

Engineering 82.420★

**Structural Analysis I**

Basic concepts of structural analysis; review of matrices and solution of equations; structural deformations and the virtual work method; force (flexibility) method of analysis; displacement (stiffness) method of analysis, important energy theorems, the moment distribution method; introduction to computer analysis of structures by the stiffness method. (Also listed as Architecture 77.314★.)

Prerequisite: Engineering 82.323★.

Text: Ghali and Neville, *Structural Analysis*.

Fall term: Lectures three hours a week, problem analysis three hours alternate weeks.

A.G. Razaqpur

Engineering 82.421★

**Structural Analysis II**

Review of matrix force method, formulation of the matrix stiffness method; analysis of continuous beams, plane trusses, plane frames, three-dimensional frames; computer analysis of structures; introduction to finite elements; structural dynamics.

Prerequisite: Engineering 82.420★.

References: Beaufait, *Basic Concepts of Structural Analysis*; Gere and Weaver, *Analysis of Framed Structures*.

Winter term: Lectures and tutorials two hours a week, problem analysis three hours alternate weeks.

G.A. Hartley

Engineering 82.422★

**Structural Design in Timber**

Introduction to structural design in timber. Properties and anatomy of wood. Description of wood products. Factors affecting the strength and structural behaviour of wood structures. Strength evaluation and testing. Allowable stresses. Design in bending, compression and combined stresses. Design of trusses, frames, glulam structures, plywood components. Design of structural systems, formwork, foundations. Connections and connectors. Care, inspection, maintenance and repair of timber structures.

Prerequisite: Fourth-year registration or permission of the department.

Fall term: Lectures two hours a week, problem analysis three hours alternate weeks.

J.J. Salinas

Engineering 82.423★

**Reinforced Concrete I**

Based on reinforced concrete behaviour in flexure, compression, shear, and bond, analysis and design concepts are developed for beams, slabs, columns, walls and footings. Introduction to behaviour and design of prestressed concrete.

Prerequisite: Engineering 82.322★.

Texts: Pillai and Kirk, *Reinforced Concrete Design in Canada*; CAN3-A23.3-M84, *Design of Concrete Structures for Buildings*.

Fall term: Lectures three hours a week, problem analysis three hours alternate weeks.

G.T. Suter

Engineering 82.425★

**Design of Structural Steel Components**

Design of axially loaded tension and compression members; design of beams in flexure; design of members subjected to combined compression and flexure; design of welded and bolted connections; design of plate girders. (Also listed as Architecture 77.316★.)

Prerequisites: Engineering 82.322★ and 82.324★.

Texts: Adams, Krantz and Kulak, *Limit States Design in Structural Steel — SI Units*; CISC *Handbook of Steel Construction*.

Fall term: Lectures three hours a week, problem analysis three hours alternate weeks.

J.L. Humar

Engineering 82.426★

**Design of Steel Structures**

Steel building design: the design process, structural loads, gravity load design of floor systems, beams, girders, two cycle moment distribution; column gravity loads and moments and design; lateral loads, methods of lateral load resistance, design considerations; bracing system analysis for loads and drift; approximate frame analysis



for loads and drift;  $P\Delta$  effect; estimating steel costs; introduction to plastic design.

Prerequisites: Engineering 82.425★ and Fourth-year registration.

References: *National Building Code of Canada (1980)*; *CISC Handbook of Steel Construction*.

Winter term: Lectures two hours a week, problem analysis three hours alternate weeks.

J.L. Humar

#### Engineering 82.427★

##### **Reinforced Concrete II**

Prestressed concrete design including pre-tensioned and post-tensioned members, prestressing losses, cable profiles, ultimate strength, shear and diagonal tension, bond and end block considerations. Introductory concrete bridge design including bridge types, loadings, procedures for single span slab, T-beam and AASHTO girder bridges, diaphragms and bearing design. Basic building design in reinforced and prestressed concrete.

Prerequisite: Engineering 82.423★.

Text: Nilson, *Design of Prestressed Concrete*.

Winter term: Lectures two hours a week, problem analysis three hours alternate weeks.

G.T. Suter

#### Engineering 82.428★

##### **Geotechnical Engineering**

Site investigations. In-situ testing, techniques and their interpretation; ground-water observations, piezometers.

Sampling, seismic investigations. Earth pressures; at rest, active and passive conditions. Design of gravity, semi-gravity and anchored sheet pile walls. Effects of ground-water flow. Ground and rock anchors, strutted excavations. Bearing capacity of strip, circular and rectangular footings on cohesive and cohesionless soils. Pile foundations, group action, load distribution in pile groups, bearing capacity. Settlement of foundations. Stability of earth slopes.

Prerequisite: Engineering 82.328★.

Text: Bowles, *Foundation Analysis and Design*, *Canadian Foundation Engineering Manual*.

Reference: Winterkorn and Fang, *Foundation Engineering Handbook*.

Fall term: Lectures three hours a week, problem analysis three hours alternate weeks.

G.E. Bauer

#### Engineering 82.429★

##### **Highway Engineering**

Highway planning, economics and finance; highway location and geometric design; traffic engineering; highway drainage and subgrade structure; structural analysis and design of rigid and flexible pavements; mineral aggregates; bituminous mix design; principles of frost action and applications to highway design.

Prerequisite: Fourth-year registration.

Text: Oglesky, *Highway Engineering, Fourth Edition*.

References: Wright and Paquette, *Highway Engineering, Fourth Edition*; Yoder and Witzah, *Principles of Pavement Design*.

Winter term: Lectures two hours a week, problem analysis three hours alternate weeks.

A.O.A. Halim

#### Engineering 82.430★

##### **Structural Planning in Architecture**

The nature of structural planning problems; general criteria in structural planning; functional, technical, economic and form considerations; loads, classification and estimation; building codes, fire resistance require-

ments; structural systems; various classifications; comparative study; integration of structural systems with other building systems; synthesis, preliminary analysis and evaluation of alternative structural schemes; case studies. (Also listed as Architecture 77.424★.)

Prerequisites: Fourth-year registration, permission of the department.

References: Schodek, *Structures*; White-Gergely-Sexsmith, *Structural Engineering*.

Winter term: Lectures two hours a week, problem analysis three hours alternate weeks.

J. Adjeleian

#### Engineering 82.431★

##### **Foundation Engineering**

A critical study of the theories in soil mechanics and their application to the solution of geotechnical engineering problems. Field investigations, laboratory and field testing, special footings, mat foundations, caissons, pile foundations and excavations. Discussion of new methods and current research.

Prerequisite: Engineering 82.428★.

Text: Bowles, *Foundation Analysis and Design*; *Foundation Engineering Manual*, Canadian Geotechnical Society.

References: Winterkorn and Fang, *Foundation Engineering Handbook*.

Winter term: Lectures two hours a week, laboratory three hours alternate weeks.

G.E. Bauer

#### Engineering 82.434★

##### **Transportation**

Transportation within the socio-economic environment. Transportation systems and components. Vehicle motion and flow. Transportation terminals. Operations plans. Transportation costs. Transportation demand. Supply of transportation. Transportation network flows. Environmental impacts. Introduction to planning, management and design process. (Also listed as Geography 45.434★.)

Prerequisite: Third-year registration.

Text: Morlok, *Introduction to Transportation Engineering and Planning*, 1978.

Winter term: Lectures two hours a week, problem analysis three hours alternate weeks.

A.M. Khan

#### Engineering 82.435★

##### **Transportation Geography**

Offered in the Department of Geography as Geography 45.442★.

Not offered 1986-87.

#### Engineering 82.437★

##### **Hydraulics of Municipal Waste Water Systems**

Hydraulics of sewers flowing partially full, flow in sewer junctions and transitions; estimates of amounts of sanitary and storm sewage; design of sewage collection systems; pumps, control, and measuring devices. Hydraulics of treatment processes, disposal problems.

Prerequisite: Fourth-year registration.

Winter term: Lectures two hours a week, problem analysis three hours alternate weeks.

R. Droste, D.R. Townsend

#### Engineering 82.440★

##### **Construction/Project Management**

Systems approach to project planning and control. Analysis of alternative network planning methods: CPM, precedence and PERT. Planning procedure, computer

techniques and estimating. Physical, economic and financial feasibility. Implementation feedback and control. Case studies.

Prerequisite: Fourth-year registration.

Text: Peurifoy, *Construction Planning Equipment and Methods*.

Fall term: Lectures two hours a week, problem analysis three hours alternate weeks.

A.O.A. Halim

Engineering 82.441★

**Hydrology**

Hydrologic cycle, stream flow, hydrology of snow, sub-surface water, hydraulics of wells, unit hydrograph and S-curve analysis of flood flows, infiltration, river and reservoir routing, introduction to statistical inference and time series analysis of hydrologic data. (Also listed as Geology 67.419★ and Geography 45.413★.)

Text: DeWeist, *Geohydrology*.

References: Gray, *Principles of Hydrology*; Bruce and Clark, *Introduction to Hydrometeorology*.

Fall term: Lectures two hours a week, problem analysis three hours alternate weeks.

R. Condie, P. Pilon

Engineering 82.450★

**Computer Methods in Civil Engineering**

The application of computers to the solution of civil engineering problems for the areas of surveying, traffic simulation, fluid distribution and collection, structural analysis and geotechnical engineering (with network and flow analysis being a common theme). Emphasis is placed on the careful design and implementation of reasonably large applications programs. Computing techniques include data structuring, computer graphics, data storage and data bases, and man-machine communication. Effective use of existing software is discussed.

Prerequisite: Engineering 94.265★ and Fourth-year registration.

Text: Lecture notes.

Fall term: Lectures three hours a week.

N.M. Holtz

Engineering 82.495★

**Professional Practice Seminar**

This course is intended to familiarize future professional engineers with current engineering practice and its relationship to other disciplines and to society in general. A sequence of seminars is presented by faculty and external lecturers covering topics such as the Professional Engineers Act, professional ethics, responsibilities of professional engineers and engineering practice appropriate to the discipline. The development of communication skills, both oral and written, is emphasized.

Precludes additional credit for Engineering 88.495★, 97.395★ and 94.395★.

Prerequisite: Fourth-year registration.

Winter term: Seminars three hours a week.

J. Adjeleian

Engineering 82.497

**Engineering Project**

As a part of the Fourth-year program, each student is required to select and complete a major project in engineering analysis, design, development or research. The objective is to provide an opportunity to develop initiative, self-reliance, creative ability and engineering judgment. The results must be submitted in a comprehensive report with appropriate drawings, charts,

bibliography, etc. Each student is required to submit his or her engineering project proposal to the Chairman of the Department of Civil Engineering on or before the last day of classes in September.

Students enrolled in the Fourth-year civil engineering option may elect to satisfy the project requirements by successfully completing two workshop courses from "77" Series in the School of Architecture with the approval of the Chairman of the Department of Civil Engineering.



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## Officers of Instruction

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### Chairman

M.A. Copeland

### Professors

A.R. Boothroyd

M.A. Copeland

R.G. Harrison

### Associate Professors

C.H. Chan

J.P. Knight

B.A. Syrett

P.D. van der Puije

J.S. Wight

### Assistant Professors

T. Kwasniewski

N.G. Tarr

### Instructor

T.G. Ray

### Adjunct Professors

V. Makios

R.E. Thomas

### Sessional Lecturer

J. Moss

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## Courses Offered

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### Engineering 97.251★

#### Circuits and Signals

Nature and properties of signals. Fourier analysis. Circuit elements: definitions and basic properties. Voltage and current sources. Kirchoff's laws, linearity, and superposition. Thevenin and Norton Theorems: circuit simplification techniques; resistance circuits, AC signals; phasors. AC steady-state analysis: impedance, admittance and transfer properties; frequency response; detailed treatment of first order (RL and RC) circuits. Transient response: first-order circuits, form of response; initial and final condition; relation to AC steady-state properties. Properties of LR and CR circuits: AC steady-state response; resonance.

Prerequisites: Physics 75.100 and concurrent registration in Mathematics 69.201.

Text: Johnson, Hilburn and Johnson, *Basic Electric Circuit Analysis*.

Fall term: Lectures three hours a week, laboratory and problem analysis three hours a week.

R.G. Harrison, P.D. van der Puije

### Engineering 97.354★

#### Electromagnetic Theory

Vector analysis: gradient, divergence, curl and Laplacian. Divergence theorem, Stokes' theorem, Maxwell's equations. Electrostatic fields, Coulomb's law, Gauss' law, Poisson and Laplace equations. Image and iteration techniques. Boundary value problems. Force and energy. Magnetostatic fields, Ampere's law, Biot-Savart law. Time varying fields, skin effect.

Precludes additional credit for Engineering 97.454★.

Prerequisites: Mathematics 69.201, Engineering 94.261★.

Text: Plonus, *Applied Electromagnetics*.

Winter term: Lectures and tutorials three hours a week.

B.A. Syrett

### Engineering 97.357★

#### Electronics I

A course that treats the introductory aspects of electronics. The following topics are covered: Qualitative semiconductor physics, leading to the diode equation. Diode applications. Silicon controlled rectifier and applications. Basis of bipolar junction transistors. Operational amplifiers and their application in feedback configurations including active filters. Junction field-effect transistors: theory, biasing circuits, linear amplifier design. Metal-oxide-semiconductor field-effect transistors: theory and applications in linear circuits and digital gates. Digital circuits and applications in elementary combinational and sequential networks.

Prerequisites: Engineering 97.251★; Mathematics 69.201 (may be taken concurrently).

Text: Sedra and Smith, *Micro-Electronic Circuits*.

Fall term: Lectures three hours a week, laboratory and problem analysis three hours a week.

R.G. Harrison, B.A. Syrett

### Engineering 97.359★

#### Electronics II

This course builds upon the material of Engineering 97.357★ and acts as a bridge between discrete and integrated circuits. The laboratory is design-oriented and includes project activities. Topics: Introduction to physical nature of semiconductor devices and integrated circuits. DC, small signal AC and switching properties of bipolar junction transistors. Linear amplifiers (small signal); high frequency response and bandwidth considerations; two-port analysis. Large signal amplifiers; class A, B and C operation; power amplifiers; transformerless circuits. Feedback amplifiers and operational amplifiers; considerations of gain, sensitivity, distortion and stability. Frequency selective circuit design. Oscillators and multivibrators.

Prerequisites: Engineering 97.357★ and 94.360★.

Text: Sedra and Smith, *Micro-Electronic Circuits*.

Winter term: Lectures three hours a week, laboratory three hours a week.

C.H. Chan

### Engineering 97.395★

#### Professional Practice Seminar

This course is intended to familiarize future professional engineers with current engineering practice and its relationship to other disciplines and to society in general. A sequence of seminars is presented by faculty and external lecturers covering topics such as the Professional Engineers Act, professional ethics, responsibilities of professional engineers and engineering practice appropriate to the discipline. The development of communication skills, both oral and written, is emphasized. (Also listed as Engineering 94.395★.)

Precludes additional credit for Engineering 82.495★ and 88.495★.

Prerequisite: Third-year registration.

Winter term: Seminars three hours a week.

J.S. Wight

### Engineering 97.450★

#### Digital Electronic Circuit Design

Aspects of design of digital integrated circuits as circuit blocks for the realization of required system functions are treated with project activities in the laboratory. Topics include MOS transistors as circuit elements, MOS and CMOS logic gates, electrical and logic simulation on computer workstations, MSI and LSI digital circuits, PLAs, ULAs, combinational and sequential design. Timing



problems in digital design. A/D and D/A conversion. VLSI design options.

Prerequisites: Engineering 97.359★ and 94.367★.

Texts: Fletcher, *An Engineering Approach to Digital Design*; Sedra and Smith, *Micro-Electronic Circuits*.

Fall term: Lectures two hours a week, laboratory three hours a week.

J.P. Knight

#### Engineering 97.452★

##### **Microwave Circuits**

Introduction to the principles of operation and the properties of important microwave tubes, semiconductor devices, and passive components. Scattering matrix description of microwave junctions. Properties of basic reciprocal and non-reciprocal passive microwave devices (hybrids, tuners, impedance transformers, cavities, filters, attenuators, isolators and circulators). Fundamentals of microwave amplifiers and oscillators. Design of solid-state microwave amplifiers and oscillators in coaxial, waveguide, and microstrip transmission media.

Prerequisite: Engineering 97.453★.

Text: Ghandi, *Microwave Engineering and Applications*.

Winter term: Lectures two hours a week, laboratory three hours alternate weeks.

B.A. Syrett

#### Engineering 97.453★

##### **Transmission Lines and Antennas**

Introduction to transmission lines; transmission lines as distributed circuit elements, travelling waves and standing waves, reflection coefficient, standing wave ratio, impedance transformation, Smith charts, stub matching, quarter-wave transformers, half-wave filters, transients. Introduction to guided waves; coaxial transmission lines, rectangular waveguide, waveguide resonators, optical fibers. Introduction to antennas; infinitesimal linear element, half-wave dipole, field equations, near and far fields, radiation resistance, gain, directivity, effective area. Introduction to linear arrays; array polynomial, broadside array, end-fire array. Laboratory on microwave measurements and techniques.

Prerequisite: Engineering 97.354★.

Text: Anderson, *Electric Transmission Line Fundamentals*. Fall term: Lectures three hours a week, laboratory three hours alternate weeks.

J.S. Wight

#### Engineering 97.455

**Telecommunication Circuits** A course of study of the commonly used circuit components in modern telecommunication systems. Both analogue and digital systems are included. The design of the hardware is emphasized. Examples are drawn from broadcasting, telephony and satellite systems.

Prerequisites: Engineering 97.359★ and 97.451★.

Winter term: Lectures two hours a week, laboratory three hours alternate weeks.

P.D. van der Puije

#### Engineering 97.459★

##### **Communication Links**

Free space communication links. Transmission fundamentals; decibel, SNR, noise figure, intermodulation distortion, antenna gain, EIRP. Line-of-sight microwave links; free space propagation loss, earth's bulge, Fresnel clearance, FM transmitter, horn feeds, parabolic antennas, FM receiver, diversity techniques, NPR, fade margin, repeaters. Satellite links; earth space window, path loss, up and down link calculations, G/T, C/T, multiple accessing, earth station sub-systems. Fiber optic

links; fiber types, connectors, sources, detectors, system design. Tropospheric scatter links; fading, path loss, take-off angle, equipment. Millimeter wave links; propagation, rainfall loss, systems, short hop. High-frequency radio links; ionosphere, skywaves, systems, rhombic and log periodic antennas, diversity techniques.

Prerequisite: Engineering 94.451★.

Text: Freeman, *Telecommunications Transmission Handbook, Second Edition*.

Winter term: Lectures three hours a week.

J.S. Wight

#### Engineering 97.468★

##### **Solid State Electronics**

Fundamentals of solid-state physics as applied to semiconductors: band theory, electrons and holes, drift and diffusion; recombination and generation. Theory of the pn junction: current flow in forward and reverse bias; small-signal capacitance; switching transients; voltage limitations. MOS capacitors: flatband and threshold voltages; use in process control. MOSFETs: first-order model; bulk-charge model; body effect; short channel effects. Basic principles of MOS IC fabrication. Bipolar junction transistors: Ebers-Moll model; operating regimes; switching response. Laboratory experiments illustrate principles of semiconductor device physics.

Prerequisite: Engineering 97.357★.

Text: S.M. Sze, *Semiconductor Devices: Physics and Technology*.

Fall term: Lectures three hours a week, laboratory three hours alternate weeks.

N.G. Tarr

#### Engineering 97.469★

##### **Integrated Circuit Design and Fabrication**

Basic processing steps used in the fabrication of silicon integrated circuits (ICs): oxidation, diffusion, ion implantation, epitaxy, thin-film deposition, photolithography and etching. Computer-aided process design and modelling. Basic logic gate structures used in static and dynamic MOS ICs: transient analysis. Design rules and IC layout. Laboratory work involves the computer-aided design and layout of a simple MOS IC.

Prerequisites: Engineering 97.450★ and 97.468★.

Text: Mavor et al., *Introduction to MOS LSI Design*.

Winter term: Lectures two hours a week, laboratory three hours alternate weeks.

N.G. Tarr

#### Engineering 97.475★

##### **Electronic Properties of Materials**

Electrical conduction and conductor materials; electrical insulators and dielectrics including ceramics, plastics, rubbers and composite materials; printed circuit and thin film techniques; electrical emission and emitter materials; magnetism and magnetic materials; optical properties including photographic images and luminescence; optical materials; electronic packaging materials.

Prerequisites: Engineering 88.270★ and 97.251★.

Reference: Ralls, Courtney and Wulff, *An Introduction to Materials Science Engineering*.

Winter term: Lectures three hours a week.

J. Moss

#### Engineering 97.476★

##### **Digital Integrated Electronics**

This course is intended to follow Engineering 97.450★, Electronic Circuit and System Design, and to be concerned with circuit design at a more advanced level in terms of digital integrated circuit components, to realize overall system objectives. Consideration is given to design



in terms of available IC components and also to system design in custom LSI format. An important aspect of the course is the laboratory, in which students gain experience in the use of integrated circuits in project activities. Prerequisites: Engineering 97.450★ and 94.461★.

Winter term: Lectures two hours a week, laboratory and problem analysis three hours a week.

*T. Kwasniewski*

#### Engineering 97.477★

##### **Analog Integrated Electronics**

A course that develops on the linear integrated circuit aspects covered in Engineering 97.450★, Electronic Circuit and System Design. Integration aspects of active filters and other signal processing circuits are covered in both linear and sampled analog techniques, as well as A/D and D/A converters. Interfacing between analog and digital. Noise aspects, including dynamic range and signal to noise ratio.

Prerequisite: Engineering 97.359★.

Winter term: Lectures two hours a week, laboratory and problem analysis three hours a week.

*M.A. Copeland*

#### Engineering 97.497 or 97.498

##### **Engineering Project**

As part of the Fourth-year program, each student is required to select and complete a major project in engineering analysis, design, development or research. The objective is to provide an opportunity to develop initiative, self-reliance, creative ability and engineering judgment. The results must be submitted in a comprehensive report with appropriate drawings, charts, bibliography, etc. Each student is required to submit his or her engineering project proposal to the Chairman of the Department of Electronics on or before the last day of classes in September.

##### **Note:**

Students in the Electrical Engineering degree program whose engineering project is under the supervision of a faculty member within the Department of Electronics should register in Engineering 97.497; those whose project is under the supervision of a faculty member in the Department of Systems and Computer Engineering should register in Engineering 94.497.

Students in the Computer Systems Engineering degree program whose engineering project is under the supervision of a faculty member within the Department of Electronics should register in Engineering 97.498; those whose project is under the supervision of a faculty member in the Department of Systems and Computer Engineering should register in Engineering 94.498.

# Department of Mechanical and Aeronautical Engineering

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## Officers of instruction

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### Chairman

H.I.H. Saravanamuttoo

### Professors

M.J. Bibby

J.A. Goldak

G. Kardos

R.J. Kind

J. Kirkhope

J. Lukasiewicz

E.G. Plett

W.J. Rainbird

J.T. Rogers

H.I.H. Saravanamuttoo

J.Y. Wong

### Associate Professors

R. Bell

F.W. Black

R.I. Hodge

W.G. Richarz

J.Z. Sasiadek

S.A. Sjolander

C.L. Tan

### Assistant Professor

T.C. Currie

### Adjunct Professors

M.C. deMalherbe

W. Wallace

### Sessional Lecturers

D. Boyd

D.W. Laurie-Lean

F. Moaddel

N.M. Standen

W. Tyson

F. Vernadat

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## Courses Offered

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Engineering 88.100

### Engineering Graphics and Design

Mechanical drawing; orthographic projection; auxiliary views; sections and conventions; oblique and isometric drawings; dimensions, notes, fits and tolerances; threads and fasteners; working drawings; specialty drawing — electronic, welding, piping, structural, maps; computer assisted drawing. Descriptive geometry; point, line and plane problems; intersections and developments. Data presentation by graphs and charts; pictorial sketching; engineering reports. Graphical solutions; graphical statics including solution to simple truss problems.

Lectures and tutorials two hours a week, laboratory four hours a week.

F.W. Black

Engineering 88.211★

### Dynamics

Kinematics and kinetics of particles: rectilinear and curvilinear motions; Newton's second law; energy and momentum methods. Kinematics and kinetics of rigid bodies: plane motion of rigid bodies; forces and accelerations; energy and momentum methods. Mechanical vibrations.

Prerequisites: Engineering 82.111★ and Mathematics 69.104★ and 69.114★.

Text: Meriam, *Engineering Mechanics, Volume II, Dynamics, SI/English version*.

One term: Lectures three hours a week, problem analysis three hours a week. Offered both terms.

R. Bell, J. Kirkhope, J.Y. Wong

Engineering 88.230★

### Introductory Fluid Mechanics

Fluid properties. Units. Fluid statics; pressure distribution in fluid at rest; hydrostatic forces on plane and curved surfaces; buoyancy. Kinematics and dynamics of fluid motion: concepts of streamline, control volume, steady and one-dimensional flows; continuity, Euler, Bernoulli, steady flow energy, momentum and moment of momentum equations; applications.

Prerequisites: Mathematics 69.104★ and 69.114★ and Engineering 82.111★.

One term: Lectures three hours a week, laboratory and problem analysis three hours alternate weeks. Offered both terms.

W.G. Richarz, S.A. Sjolander

Engineering 88.240★

### Introductory Thermodynamics

Basic concepts of heat, work, temperature, property, state, system, control volume. The First Law for systems and control volumes with applications, properties of pure substances, phase diagrams. The perfect gas laws and relations. The Second Law and its corollaries, entropy from classical approach. Properties of gas mixtures. Analysis of simple cycles.

Prerequisites: Mathematics 69.104★ and 69.114★, Chemistry 65.111★ and Physics 75.100.

Reference: Van Wylen and Sonntag, *Fundamentals of Classical Thermodynamics*.

One term: Lectures and tutorials three hours a week, problem analysis and laboratory three hours a week. Offered both terms.

E.G. Plett

Engineering 88.270★

### Elements of Materials Engineering

The student is introduced to the structure of engineering materials and their behaviour in service and manufacturing. The topics presented are the following: the structure of engineering materials; the elastic and plastic behaviour of materials; alloys, phase diagrams, solid solutions, eutectic and eutectoid materials; steels; heat treatment and strengthening mechanisms in metals and alloys; failure mechanisms.

Prerequisites: Physics 75.100, Chemistry 65.111★, Mathematics 69.104★ and Engineering 82.220★ (may be taken concurrently).

Texts: Goldak, *Materials Engineering*; Bibby, *Materials Engineering Laboratory Manual*; Goldak, *Solutions to Problems in Engineering 88.270★*.

One term: Lectures and tutorials three hours a week, problem analysis and laboratory three hours a week. Offered both terms.

M.J. Bibby, J.A. Goldak

Engineering 88.302★

### Machine Design and Practice

The design of mechanical machine elements is studied from a theoretical and practical point of view. Topics covered are: design factors, fatigue, shafting, springs, gearing, bearings, flexible drive elements, brakes and clutches, fasteners and welded structures. Problem analysis emphasizes the application to real mechanical



engineering problems.

Text: Deutschman et al., *Machine Design*.

Winter term: Lectures three hours a week, problem analysis three hours a week.

G. Kardos

#### Engineering 88.304★

##### **Dynamics of Machinery**

Kinematic and dynamic analysis and synthesis of mechanisms and machines. Design and analysis considerations in reciprocating and rotating machinery. Vibrations in machinery, vibrations of systems with more than one degree of freedom. Vibration and shock isolation. Experimental investigation of dynamic systems.

Prerequisite: Engineering 88.211★.

References: Martin, *Kinematics and Dynamics of Machines*; Thomson, *Vibration Theory and Applications*.

Winter term: Lectures three hours a week.

J. Kirkhope

#### Engineering 88.333★

##### **Fluid Mechanics and Heat Transfer**

Review of the fundamental equations for one-dimensional ideal fluid flow. Dimensional analysis and similarity. One-dimensional steady isentropic flow; normal shock waves. Open channel flow. One-dimensional steady heat conduction; elements of potential theory for steady two-dimensional heat conduction, potential flow and ground-water flow; analog methods; introduction to convection and radiation heat transfer.

Prerequisite: Engineering 88.230★.

Fall term: Lectures three hours a week, problem analysis and laboratory three hours a week.

R.J. Kind, W.J. Rainbird

#### Engineering 88.340★

##### **Applied Thermodynamics**

Mixture of perfect gases and vapours, psychrometry, combustion processes, differences between real and ideal cycles, gas cycles and vapour cycles for power and refrigeration plant, principles of turbomachines.

Prerequisites: Engineering 88.240★ and Third-year registration.

Reference: Rogers and Mayhew, *Engineering Thermodynamics, Work and Heat Transfer*.

Winter term: Lectures three hours a week.

H.I.H. Saravanamuttoo

#### Engineering 88.370★

##### **Principles of Manufacturing Engineering**

Manufacturing unit processes and material considerations. Casting techniques: solidification and heat flow theory, defect formation, casting design. Metal forming: elementary plasticity theory, plastic failure criteria, force and work calculations. Powder-forming techniques: theory and practice of powder consolidation, design considerations. Joining techniques: heat flow and defect formation theory, residual stresses. Machining theory and practice. Heat treatment and surface hardening: diffusion theory, principles of wear resistance.

Prerequisite: Engineering 88.270★.

Text: Bibby, *Principles of Manufacturing Engineering*.

Winter term: Lectures and tutorials three hours a week.

M.J. Bibby

#### Engineering 88.390★

##### **Mechanical Engineering Laboratory I**

A laboratory course in which each student performs a series of laboratory exercises dealing with a wide range of mechanical engineering topics. This course is intended to give students the opportunity to relate theory and

practice and to provide experience with modern engineering equipment and measurement techniques. Good reporting practice is emphasized.

Winter term: Laboratory six hours a week.

#### Engineering 88.403★

##### **Mechanical Systems Design**

The course emphasizes the design of mechanical systems. Topics to be covered include: establishing design criteria, conceptual design, design economics, value analysis, synthesis, optimization. The problem analysis involves synthesis of real life mechanical systems.

Prerequisite: Engineering 88.302★.

Reference: Selected readings from *Machine Design*.

Fall term: Lectures three hours a week, problem analysis three hours a week.

G. Kardos

#### Engineering 88.406★

##### **Vehicle Engineering I**

The course emphasizes the engineering and design principles of road transport technology. Topics to be covered include: performance characteristics, handling behaviour, and ride quality of road vehicles. The prediction and evaluation of the performance of road transport systems are included.

Prerequisites: Engineering 88.211★ and Third- or Fourth-year registration.

Text: Wong, *Theory of Ground Vehicles*.

Fall term: Lectures three hours a week.

J.Y. Wong

#### Engineering 88.407★

##### **Vehicle Engineering II**

The course emphasizes the engineering and design principles of off-road transport technology and air cushion technology. Topics to be covered include: the mechanics of vehicle-terrain interaction-Terramechanics, performance characteristics of off-road vehicles, steering of tracked vehicles, air cushion systems and their performance. The prediction and evaluation of the performance of off-road transport systems are included.

Prerequisites: Engineering 88.211★ and Third- or Fourth-year registration.

Text: Wong, *Theory of Ground Vehicles*.

Winter term: Lectures three hours a week.

J.Y. Wong

#### Engineering 88.411★

##### **Strength Analysis**

This course is intended to extend the student's ability in design and stress analysis of machine structures. Topics include: theory of elasticity, stress function approach in elasticity, stress concentrations, experimental stress analysis, plasticity, introduction to creep analysis, bending of thin axisymmetric plates and shells and introduction to the finite element method of stress analysis.

Prerequisite: Engineering 82.322★.

References: Budyns, *Advanced Strength and Applied Stress Analysis*; Juvinall, *Stress, Strain and Strength*.

Fall term: Lectures three hours a week.

C.L. Tan

#### Engineering 88.412★

##### **Failure Analysis and Fracture Control**

An introduction to the analysis and prevention of metal failures. Beginning with a consideration of the micro-mechanisms by which fracture occurs, the conditions that lead to growth of cracks are outlined. The discipline of fracture mechanics is introduced to characterize mechanical conditions at the tip of a crack, and to



provide the necessary framework for discussion of fatigue crack propagation and environment-assisted cracking. Design methods to avoid fracture through intelligent materials selection and prediction of lifetime to failure from unavoidable defects are introduced.

Text: *Engineering 88.412 Failure Analysis Manual*.

References: Rolfe and Barsom, *Fracture and Fatigue Control in Structures*; Knott, *Fundamentals of Fracture Mechanics*; Hertzberg, *Deformation and Fracture Mechanics of Engineering Materials*.

Winter term: Lectures three hours a week.

W. Tyson

#### Engineering 88.414★

##### **Vibrations in Mechanical Systems**

Transient vibrations of single-degree-of-freedom systems. Free and forced vibrations of two-degrees of freedom systems. Numerical methods for multi-degree-of-freedom systems; influence coefficients; Dunkerley's equation; orthogonality of principal modes; method of matrix iteration; the Holzer-type problem; geared and branched systems. Vibration of continuous systems; longitudinal and torsional vibration of rods; lateral vibration of beams. Modal analysis techniques; non-linear vibration. Prerequisite: Engineering 88.304★.

Reference: Thomson, *Theory of Vibration with Applications*.

Fall term: Lectures three hours a week.

W.G. Richarz

#### Engineering 88.430★

##### **Acoustics and Noise Control**

Behaviour of sound waves. Selection of instrumentation. Practical acoustical measurements. Measurements of power level and directivity patterns. Sound propagation outdoors. Sound in small and large enclosures. Properties of porous acoustic materials. Transmission and radiation of acoustic waves by solid structures. Noise control in ventilation systems. Case histories of machine and shop quieting, office buildings and homes. Noise control in transportation.

Prerequisite: Third-year registration.

Reference: Hemond, *Engineering Acoustics and Noise Control*.

Winter term: Lectures three hours a week.

W.G. Richarz

#### Engineering 88.432★

##### **Fundamentals of Fluid Dynamics**

Differential equations of fluid motion. Subsonic flow: potential flow theory; outline of panel methods and flows over wings and bodies. Supersonic flow: oblique shock waves and Prandtl-Meyer expansions; flows over wings and bodies. Viscous flow: the boundary-layer approximation; outline of boundary-layer calculation methods; coupling of viscous and inviscid regions of flow.

Prerequisite: Engineering 88.333★.

References: Kuethe and Chow, *Foundations of Aerodynamics*; Liepman and Roshko, *Elements of Gasdynamics*; White, *Viscous Fluid Flow*.

Fall term: Lectures three hours a week.

S.A. Sjolander

#### Engineering 88.435★

##### **Fluid Machinery**

Types of fluid machines. Dimensional analysis and similarity, performance parameters, performance characteristics, running points. Cavitation. Velocity triangles, Euler pump and turbine equation, impulse and reaction. Radial-flow pumps, fans and compressors: analysis, design and operation. Radial-flow and mixed-flow turbines. Axial-

flow pumps, fans and compressors: analysis and design by cascade and blade-element methods, staging, off-design performance. Axial-flow turbines. Fluid couplings and torque converters.

Prerequisite: Engineering 88.333★.

Reference: Dixon, *Fluid Mechanics, Thermodynamics of Turbomachinery*.

Winter term: Lectures three hours a week.

R.J. Kind

#### Engineering 88.437★

##### **Mechanics of Flight**

Elements of airplane aerodynamics; static stability and control. Performance analysis, including drag estimation, speed, payload, range, endurance, take-off and landing. Introduction to operating economics.

Prerequisite: Engineering 88.333★.

References: Anderson, *Introduction to Flight*; McCormick, *Aerodynamics, Aeronautics and Flight Mechanics*.

Winter term: Lectures three hours a week.

W.J. Rainbird

#### Engineering 88.441★

##### **Power Plant Analysis**

Criteria of merit; selection of power plant for transportation and power generation applications; interrelation among mechanical, thermodynamic and aerodynamic design processes; jet propulsion, turbojets and turbofans; alternative proposals for vehicular power plant; combined cycle applications.

Reference: Cohen, Rogers and Saravanamuttoo, *Gas Turbine Theory*.

Prerequisite: Engineering 88.240★.

Fall term: Lectures three hours a week.

T.C. Currie

#### Engineering 88.443★

##### **Energy Conversion and Power Generation**

Energy sources and resources. Basic elements of power generation. Hydro-electric, fossil-fuel and fissile-fuel power plants. Other methods of conversion. Future methods of conversion. Economic and environmental considerations. Power generation systems. Future power needs.

Prerequisite: Engineering 88.240★.

Winter term: Lectures three hours a week, power plant visits.

J.T. Rogers

#### Engineering 88.446★

##### **Heat Transfer**

An introduction to the mechanisms of heat transfer with emphasis on the basic fundamentals and practical solutions. Steady and transient conduction: solution by analytical and numerical methods and electrical analog techniques. Convective heat transfer: free and forced convection for laminar and turbulent flows; heat exchangers. Heat transfer by radiation between black and grey surfaces, radiation shields, solar radiation. Boiling and condensation heat transfer. Selected applications including heat pipes and environmental heat transfer processes.

Prerequisites: Engineering 88.333★ and Fourth-year registration.

References: Chapman, *Heat Transfer*, Hsu, *Engineering Heat Transfer*.

Fall term: Lectures three hours a week.

J.T. Rogers



Engineering 88.447★

**Heating, Ventilating and Air Conditioning**

Comfort. Environmental demands for residential, commercial and industrial systems. Methods of altering and controlling environment. Air distribution. Refrigeration methods, equipment and controls. Integrated year-round air-conditioning and heating systems; heat pumps. Cooling load and air-conditioning calculations. Thermal radiation control. Component matching. System analysis and design.

Prerequisites: Engineering 88.240★ and Third-year registration.

Winter term: Lectures three hours a week.

Engineering 88.452★

**Feedback Control Systems**

Control systems and terminology. Design of automatic control systems; analysis and synthesis, transfer function, stability, Laplace and Fourier transforms, time and frequency design techniques, performance criteria. Linear and non-linear systems. State variables. Discrete and digital systems; z-transforms. Control system components; hydraulic, pneumatic, electronic. Introduction to microprocessors and their applications. Automation of industrial processes.

Prerequisites: Mathematics 69.375★ and Engineering 94.360★.

Texts: Hostetter, Savant, Stefani, *Design of Feedback Control Systems*; Dorf, *Modern Control Systems*.

Reference: Shinnars, *Modern Control System Theory and Applications*.

Winter term: Lectures three hours a week.

J.Z. Sasiadek

Engineering 88.453★

**An Introduction to Robotics**

Introduction to robotics with emphasis on applications. Kinematics and dynamics of robots and manipulators. Motion trajectories. Object and task description. Motion between positions. Control. Steady-state Servo errors. Steady-state velocity and acceleration errors. Applications of microprocessors for robots and manipulator control. Actuators of robots. Sensors of robots. Compliance. Programming. Robot applications in manufacturing and other industries.

Prerequisites: Mathematics 69.375★ and Engineering 94.360★.

Text: Coiffet and Chirouze, *An Introduction to Robot Technology*.

Winter term: Lectures three hours a week.

J.Z. Sasiadek

Engineering 88.464★

**Finite Element Methods in Mechanical Engineering**

Introduction to finite element methodology with emphasis on applications to stress analysis, heat transfer and fluid flow using the simplest one- and two-dimensional elements. Direct equilibrium, variational and Galerkin formulations. Computer programs and practical applications. Higher order elements.

Fall term: Lectures three hours a week.

R. Bell

Engineering 88.473★

**Engineering Materials**

A discussion of the general engineering basis for selecting materials in design including the materials science principles, material stability, ease of fabrication and cost. The emphasis is on presentation of a general overall view of materials. Lectures deal with ferrous and non-ferrous materials, woods, plastics, ceramics, concretes,

rubbers, paints and composites.

Precludes additional credit for Engineering 88.372★ (no longer offered).

Prerequisite: Engineering 88.270★.

Engineering 88.474★

**Computer-Integrated Manufacturing Systems (CIMS)**

The course presents an overview of the topics essential to CIMS. These include computer graphics, geometric modelling, kinematic analysis, numerically controlled machining, robotics, and flexible manufacturing systems, with the objective of understanding the fundamental data structures and procedures that are appropriate to the computerization of engineering design, analysis and production.

Precludes additional credit for Engineering 88.472★ (no longer offered).

Prerequisite: Engineering 88.370★.

Fall term: Lectures three hours a week.

J.A. Goldak

Engineering 88.491★

**Mechanical Engineering Laboratory II**

A laboratory course in which each student performs a series of laboratory exercises dealing with a wide range of mechanical engineering topics. This course is intended to give students the opportunity to relate theory and practice and to provide experience with modern engineering equipment and measurement techniques. Good reporting practice is emphasized.

Fall term: Lectures and tutorials one hour a week, laboratory five hours a week.

Engineering 88.495★

**Professional Practice Seminar**

This course is intended to familiarize future professional engineers with current engineering practice and its relationship to other disciplines and to society in general. A sequence of seminars is presented by faculty and external lecturers covering topics such as the Professional Engineers Act, professional ethics, responsibilities of professional engineers and engineering practice appropriate to the discipline. The development of communication skills, both oral and written, is emphasized.

Precludes additional credit for Engineering 82.495★, 94.395★ and 97.395★.

Prerequisite: Fourth-year registration.

Winter term: Seminars three hours a week.

H.I.H. Saravanamuttoo

Engineering 88.497

**Engineering Project**

As part of the Fourth-year program, each student is required to select and complete a major project in engineering analysis, design, development or research. The objective is to provide an opportunity to develop initiative, self-reliance, creative ability and engineering judgment. The results must be submitted in a comprehensive report with appropriate drawings, charts, bibliography, etc. Each student is required to submit his or her engineering project proposal to the Chairman of the Department of Mechanical and Aeronautical Engineering on or before the last day of classes in September.

J. Lukasiewicz

# Department of Systems and Computer Engineering

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## Officers of Instruction

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*Chairman*  
B.A. Bowen

*Professors*  
B.A. Bowen  
R.J.A. Buhr  
D.C. Coll  
D.D. Falconer  
M.A. Gullen  
A.R. Kaye  
L.R. Morris  
B. Pagurek  
J.S. Riordon  
A.U.H. Sheikh  
C.M. Woodside

*Associate Professors*  
F. Hadziomerovic  
H.M. Hafez  
S.A. Mahmoud  
J.W. Miernik

*Assistant Professors*  
C.W. Chinneck  
M. Niktash  
F.S. Wong

*Adjunct Professors*  
J. de Mercado  
C. Kropp  
D. Manfield  
C.D. Stothart

*Sessional Lecturers*  
E. Abdu  
J. Johnston  
S. Michell  
R. Pandya

*Lecturers*  
J.C. Bryant  
W. Malek  
T. Pearce

*Instructor*  
J.W. Moore

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## Courses Offered

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### Engineering 94.165 Computers in Engineering

The architecture and operation of a simple digital computer. Representation of numbers and operation codes, and an introduction to assembly-level programming. Structured programming in FORTRAN and PASCAL, within a disciplined approach to typical engineering problems (iterative solutions, sorting, integration, simulation, etc.)

Texts: Meissner and Organick, *FORTRAN 77*; Grogono, *Programming in PASCAL*.

Lectures and tutorials three hours a week, workshop one hour a week.

B. Pagurek

### Engineering 94.202★

#### Advanced Programming Techniques

A course designed to provide in-depth experience in the design and construction of computer programs involving data structures. The language of instruction is PASCAL. The data structures, including stacks, queues, lists, trees and records, are presented from the viewpoint of the advanced programming concept known as a data type. Prerequisite: Engineering 94.165 or Computer Science 95.106★.

Winter term: Lectures three hours a week, problem analysis two hours a week. J.C. Bryant

### Engineering 94.261★

#### Electrical Energy Conversion

Fundamentals of energy: electrical and magnetic energy, electromagnetic induction and forces. Synchronous machines: single and three-phase AC generation and transmission. Power transformers: ideal and practical. DC motors: equations, equivalent circuits, operating characteristics, starting and speed control. AC induction motors: torque-speed characteristics, equivalent circuit, single phase motors. Applications of power semiconductor devices: rectification and control.

Prerequisite: Engineering 97.251★.

Text: Elgerd, *Basic Electric Power Engineering*.

Winter term: Lectures three hours a week, laboratory and problem analysis three hours a week.

### Engineering 94.265★

#### Computer Methods in Engineering

Methods for problem solving and data analysis using FORTRAN 77. Practical programming including the use of library software. Topics in numerical analysis that arise frequently in engineering problems such as: curve fitting to experimental data, integration of differential equations of engineering systems, formulation and solution of optimization problems — application to modelling of engineering systems. Applications of probability and statistics including: common distributions of random data, acceptance sampling, confidence intervals and concepts of reliability.

Prerequisites: Engineering 94.165 and Mathematics 69.104★ and 69.114★.

One term: Lectures three hours a week, workshop one hour alternate weeks. Offered both terms.

D.D. Falconer, H.M. Hafez

### Engineering 94.303★

#### Real-Time Computing Systems

An introduction to the use of minicomputers as real-time, interactive systems, using the PDP-11 as the primary example. Computer organization: structure, representation of instructions, numbers and characters; addressing modes, arithmetic and logical operations. Programming techniques: assembly language coding and interfacing to high level languages. Input/output: via program control, priority and vectored interrupts, and direct memory access. Peripherals: teletype, register, programmable clock, analog/digital converters, interactive graphics processor. Applications to digital signal processing and data communications.

Text: Eckhouse and Morris, *Minicomputer Systems: Organization, Programming and Applications*.

Prerequisite: Engineering 94.165 or Computer Science 95.102★ or previous experience in assembly language.

One term: Lectures and tutorials three hours a week,



laboratory two hours a week. Limited enrolment. Offered both terms.

D.C. Coll, L.R. Morris

#### Engineering 94.304★

##### File Structures and Data Bases

Introduction and definitions of data-base systems. File systems organizations: sequential, indexed-sequential, direct access and multiring files, hybrid organization. Hardware and its parameters: mechanical storage, magnetic tapes, rotating magnetic storage and large capacity storage devices. Physical implementations: hierarchical and network structure, storage allocation. System evaluation: estimates of system usage, storage requirements and cost-benefit comparison.

Precludes additional credit for Computer Science 95.300★.

Prerequisite: Engineering 94.202★ or 94.303★ (may be taken concurrently) or Computer Science 95.202★.

References: Knuth, *The Art of Computer Programming, Volume III: Searching and Sorting; The Codasyl Report*.

Winter term: Lectures three hours a week.

#### Engineering 94.310★

##### Systems Analysis

Introduction to the concepts and techniques of problem definition and analysis. Various approaches to system identification, specification and presentation are discussed. Students work in teams to test their analysis skills on case studies of information systems. Systems analysis tools: decision tables, flow charts, Gantt charts, activity networks, costing. Data and file description: forms-oriented techniques, languages. Document description. Phases in a project: feasibility study, input/output analysis and design, document and file design, system design implementation and project control. The course emphasizes applications in computer-based information systems, but the techniques used are of wider applicability.

Reference: Burch and Strater, *Information Systems: Theory and Practice*.

Prerequisite: Engineering 94.304★ (may be taken concurrently).

Fall term: Lectures three hours a week.

#### Engineering 94.320★

##### Industrial Engineering

This course introduces the fundamentals underlying rational decision-making in large engineering systems. Concept and scope of industrial engineering methods. Static optimization: steepest descent and quadratic convergence strategies: linear programming: the simplex method, computational aspects, duality. Network analysis: finite graphs, critical path scheduling. Applications are emphasized.

Precludes additional credit for Mathematics 69.381★.

Prerequisite: Engineering 94.265★.

Reference: Daellenbach and George, *Introduction to Operations Research Techniques*.

Winter term: Lectures three hours a week.

#### Engineering 94.356★

##### Automatic Control Systems I

Review of Laplace transform techniques. Effects of feedback: frequency response, pole-zero positions. Compensation: root locus, Bode plots. State variables: formulation, solution of linear systems, examples of simple second-order non-linear systems. Discrete time systems: z transforms. Signal reconstruction.

Prerequisites: Mathematics 69.201 and Engineering 94.360★.

Precludes additional credit for Engineering 94.455★.

Text: Shinnars, *Modern Control System Theory and Application*.

Winter term: Lectures and tutorials three hours a week, laboratory three hours alternate weeks.

A.U.H. Sheikh

#### Engineering 94.360★

##### Dynamics of Linear Systems

Properties of linear systems. Linear dynamic models of engineering systems. Applications of the Laplace transform. Transfer functions. Block diagrams. Frequency and time response. Effects of feedback on system response. Fourier signal analysis. System simulation with analog and digital computers.

Prerequisite: Third-year registration.

Fall term: Lectures and tutorials three hours a week, laboratory and problem analysis three hours a week.

D.C. Coll, L.R. Morris

#### Engineering 94.362★

##### Electric Power Circuits and Machines

Single phase and three phase A.C. circuits: phasors, voltage, current, and power calculations, flicker, power factor correction, asymmetry, star and delta configurations. Power measurement and rate structures. Single phase transformer: construction, theory of operation and equivalent circuit, OC/SC tests, three phase connections, name plate data and specifications. Three phase induction motor and synchronous motor: construction, theory of operation and equivalent circuits, calculations, starting. Discussion of single phase motors.

Prerequisite: Engineering 94.261★.

Text: Printed lecture notes.

Winter term: Lectures and tutorials three hours a week, laboratory three hours alternate weeks.

C.F. Kropp

#### Engineering 94.367★

##### Switching Circuits

Boolean algebra, gates, combinatorial circuits, canonical forms. Binary arithmetic, two's complement notation, multiplication and division. Arithmetic logic units, programmable logic arrays, read-only memories. Introduction to synchronous sequential circuits, finite state machines, state minimization. MSI registers, counters, finite state machine realization using MSI. Introduction to asynchronous sequential networks, flow tables, state assignment, realization.

Prerequisite: Engineering 97.251★ or permission of the Department.

Text: Roth, *Fundamentals of Logic Design*.

One term: Lectures three hours a week, laboratory three hours alternate weeks. Offered both terms.

J.C. Bryant

#### Engineering 94.395★

##### Professional Practice Seminar

This course is intended to familiarize future professional engineers with current engineering practice and its relationship to other disciplines and to society in general. A sequence of seminars is presented by faculty and external lecturers covering topics such as the Professional Engineers Act, professional ethics, responsibilities of professional engineers and engineering practice appropriate to the discipline. The development of communica-



tion skills, both oral and written, is emphasized. (Also listed as Engineering 97.395★.)

Precludes additional credit for Engineering 82.495★ and 88.495★.

Prerequisite: Third-year registration.

Winter term: Seminars three hours a week.

#### Engineering 94.401★

##### Operating Systems

An introduction to operating system principles, concurrent programs, system nucleus, structure of kernel, memory management, resource allocation and scheduling, deadlock problems and reliability. Assignments involve the use of PASCAL as a solution description language.

Precludes additional credit for Computer Science 95.300★.

Prerequisite: One of Engineering 94.303★ or Computer Science 95.203★ or equivalent experience.

Winter term: Lectures three hours a week.

F. Hadziomerovic

#### Engineering 94.405★

##### Discrete Simulation and its Applications

Simulation as a problem-solving tool. Random variate generation, general discrete simulation procedure: event table and statistical gathering. Analyses of simulation data: point and interval estimation. Confidence intervals. Network modelling, simulation and problem solving using SLAM. Other simulation languages.

Prerequisite: Fourth-year registration or permission of the Department.

Text: Banks and Carson, *Discrete-Event System Simulation*.

Winter term: Lectures three hours a week, problem analysis one hour a week.

F. Hadziomerovic

#### Engineering 94.410★

##### Structured Programming

This course introduces the student to principles and practices of structured program design and implementation using the PASCAL programming language. By the end of the course the student will be thoroughly familiar with all the major features of PASCAL and with how to use them to design and construct clearly understandable, well-formed programs for a variety of problems of interest in computer system engineering.

Precludes additional credit for Engineering 94.202★. Students who have taken Engineering 94.202★ should take 94.480★ instead of 94.410★.

Prerequisite: Engineering 94.165 or Computer Science 95.106★.

Fall term: Lectures three hours a week, laboratory three hours alternate weeks.

J.C. Bryant

#### Engineering 94.415★

##### Engineering Management

An introductory and overview course on modern management concepts; material is presented through lectures, seminars and case studies. Historical review. Basic elements, tasks, functions and activities of the management process including planning, organizing, staffing, directing and controlling. Dilemmas and constraints. Management style. Guest lecture on collective bargaining, on the psychology of management, etc. On completing the course the student should be able to: read and constructively criticize management literature; discuss "management" with experts in a rational manner; appreciate

the management basis of the first engineering work situation.

Prerequisite: Fourth-year registration.

Evening division, Fall term: Lectures two hours a week, seminars three hours alternate weeks.

C.D. Stothart

#### Engineering 94.433★

##### Advanced Real-Time Programming

Principles and practice of concurrent programming for real-time environments. Processes; inter-process communications using procedure-oriented and message-oriented mechanisms; characteristics of the real-time environment; process interaction with hardware using interrupt service routines and device drivers; structural system design for real-time applications; language issues; hardware/software tradeoffs. Emphasis is placed on mini-micro applications in areas such as intelligent terminals and computer networks.

Prerequisite: Engineering 94.303★ and 94.202★.

Fall term: Lectures two hours a week, laboratory three hours a week.

R.J.A. Buhr

#### Engineering 94.445★

##### Discrete Time Systems

Discrete time signal and system representation: time domain, z-transform, frequency domain. Sampling theorem. Digital filters: design, response, implementation, computer-aided design. Spectral analysis: the discrete Fourier transform and the FFT. Applications of digital signal processing.

Prerequisites: Engineering 94.360★

Text: Stanley, Dougherty and Dougherty, *Digital Signal Processing, Second Edition*.

Winter term: Lectures two hours a week, laboratory three hours alternate weeks.

D.C. Coll

#### Engineering 94.451★

##### Communication Systems

Representation of signals; Fourier series; Fourier transforms; Laplace transforms; time and frequency convolution. Amplitude modulation theory, circuits and systems; single sideband; vestigial sideband. Operational mathematics for non-stochastic signals; correlation; energy spectra. Sampling theorem; time division multiplexing; discrete Fourier transforms. Angle modulation; phase and frequency modulation theory, circuits and systems. Television and facsimile waveforms, spectra and modulation methods. Characteristics and uses of classical, transversal and recursive filters. Noise in circuits and systems. Pulse code modulation and delta modulation. Prerequisites: Engineering 94.360★ and Mathematics 69.375★.

References: Carlson, *Communication Systems*; Lathi, *Communication Systems*.

Fall term: Lectures three hours a week, laboratory three hours alternate weeks.

A.U.H. Sheikh

#### Engineering 94.457★

##### Introduction to the Architecture of Computer Systems

A comprehensive historical review of computing machines from Pascal and Babbage to present-day architectures, emphasis on evolution of concepts, the influence of technology and the techniques evolved to increase performance. A structured view of methodologies (for gate, register and processor design) with particular stress on their limitations. Detailed analysis and design for controllers, processors and memory systems, using exist-



ing machines as examples. A range of such component implementations is extended for enhanced performance leading to discussions of super computers. Computer classification schemes are examined. A discussion of systems of computers and related problems.

Prerequisite: Engineering 94.367★.

Text: Hayes, *Computer Architecture and Organization*.

Winter term: Lectures three hours a week.

B.A. Bowen

#### Engineering 94.460★

##### Data Communications

Probability and random variables. Binary decisions, optimal reception. Signal sets. Digital modulation and transmission: modems, probability of error. Information theory: source coding, error detection and correction. Character sets and message communications. Networks: OSI layers and standard protocols. RS232/449, HDLC, X.25. Examples of public data networks and local area networks.

Prerequisites: Fourth-year registration.

Text: Ziemer and Tranter, *Principles of Communications: Systems, Modulation and Noise, Second Edition*.

Winter term: Lectures three hours a week, laboratory three hours alternate weeks.

D.C. Coll

#### Engineering 94.461★

##### Microprocessor Systems

Brief review of internal architecture of Von Neumann computer, number presentations and arithmetic algorithms. Microprocessor: registers, pin functions, instruction set, cycles and signalling waveforms. Other components and their functions: ROM, RAM, I/Os, decoders, etc. Building a computer system: memory allocation, input/output, keyboard/display interface. Supporting software: ROM monitor, down-loader.

Precludes additional credit for Computer Science 95.306★.

Prerequisites: Engineering 94.367★ and 94.303★ or permission of the Department.

Text: Rafiqzaman, *Microcomputer Theory and Applications with the Intel SDK-85*.

Fall term: Lectures three hours a week, laboratory three hours alternate weeks.

F. Hadziomerovic

#### Engineering 94.480★

##### Software Engineering

This course is concerned with technical issues and methodologies for designing systems that may be implemented as sets of software and/or hardware modules. Decomposition of systems into modules; formal definition of modules as packages; systems as sets of packages with formally defined interfaces; graphical tools for specifying and manipulating system designs; data-flow-driven design; concurrency and real time; principles of testing, verification and reliability; case studies of significant programs and design examples; assignments involve both critical evaluation of given designs or programs and independent development of new designs to satisfy given requirements.

Prerequisites: Engineering 94.202★ and 94.401★ or the equivalent. A reading knowledge of PASCAL is assumed.

Texts: Kernighan and Plauger, *Software Tool in PASCAL*; Buhr, *System Design With ADA*.

Fall term: Lectures three hours a week, laboratory three hours alternate weeks.

R.J.A. Buhr

#### Engineering 94.481★

##### Software Engineering Project

Students participate in a team project to develop a small piece of stand-alone software in an organized and structured fashion. Non-numeric applications are emphasized. All phases of the project are considered equally important: specification, design, implementation, testing and documentation.

Prerequisite: Engineering 94.480★ or concurrent registration.

Winter term; Tutorial three hours a week.

#### Engineering 94.485★

##### Computer Systems Design Laboratory

Development of professional-level design and development expertise: converting requirements into successful real-time computing systems involving components of both software and hardware. Examples are drawn from areas such as intelligent terminals, computer networks, real-time control and signal processing systems.

Prerequisites: Engineering 94.433★, 94.461★ and 94.480★, registration in Fourth-year Computer Systems Engineering.

Winter term: Lectures two hours a week, laboratory four hours a week.

R.J.A. Buhr

#### Engineering 94.497 or 94.498

##### Engineering Project

As part of the Fourth-year program, each student is required to select and complete a major project in engineering analysis, design, development or research. The objective is to provide an opportunity to develop initiative, self-reliance, creative ability, and engineering judgment. The results must be submitted in a comprehensive report with appropriate drawings, charts, bibliography, etc. Each student is required to submit his or her engineering project proposal to the Chairman of the Department of Systems and Computer Engineering on or before the last day of classes in September.

##### Note:

Students in the Electrical Engineering degree program whose engineering project is under the supervision of a faculty member within the Department of Electronics should register in Engineering 97.497; those whose project is under the supervision of a faculty member in the Department of Systems and Computer Engineering should register in Engineering 94.497.

Students in the Computer Systems Engineering degree program whose engineering project is under the supervision of a faculty member within the Department of Electronics should register in Engineering 97.498; those whose project is under the supervision of a faculty member in the Department of Systems and Computer Engineering should register in Engineering 94.498.

# School of Architecture

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## Officers of the School

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### *Director*

A. Perez-Gomez

### *Director, Architectural Research Group*

To be appointed

### *Professors*

C.A. Aasen

J. Flanders

S.G. Haider

S. Loten

D. Moizer

R.E. Osler

H. Sharon

J.W. Strutt

### *Associate Professors*

K.S. Andonian

R.G. Brand

F. Carter

N. Griffiths

E. Kayari

G.D. Milne

A. Perez-Gomez

P. Sharp

G.F. Sutton

D. Westwood

### *Assistant Professors*

J. Cirka

T. Dubicanac

S. Parcell

### *Associated Member of the Faculty*

C.C. Gordon (Sociology)

### *Visiting Assistant Professors*

M. Gadelha

K. Muramoto

### *Adjunct Professors*

P. Lambert

J. Leaning

### *Sessional Lecturers*

R. Botros

J. Cook

W. Dawson

G. Handegord

B. Humphreys

A. Rankin

N. Subotincic

G. Trottier

### *Visiting Studio Critics*

D. Libeskind

J. Pallasmaa

### *Photographic Supervisor/Instructor*

H. Schade

student with the theoretical, technical and formal knowledge and skill necessary for creative and responsible intervention in the built environment. In order to manifest a symbolic order through plastic form, the architect should be endowed with profound interdisciplinary knowledge, emerging as a synthetic vision in the design studio. The program has two components that relate to this: a core, which is mandatory and provides the essential knowledge and experience, and a series of elective course choices that is more extensive in the upper years, allowing students to develop their own areas of architectural interest.

The degree is recognized by the Certification Board of the Royal Architectural Institute of Canada as a prerequisite to apply for certification of academic qualifications for registration to practise as an architect in provincial associations, subject to assessment of each applicant's academic record by the board. The degree is recognized by the Commonwealth Association of Architects as satisfying the academic requirements for registration to practise. Information concerning mandatory work experience and other requirements for registration may be obtained from the professional associations of Canada and the Commonwealth.

The resources of the Ottawa area, including those of Carleton University, are unique in their concentration of specialized personnel, laboratories, libraries and other facilities. They provide the opportunity and capability for a wide range of multidisciplinary academic and research programs in such fields of architecture as housing, urban studies, industrialized building and history and theory of architecture.

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## Combined B.A. and B.A. (Honours) Degree in Art History and Architecture

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The School of Architecture co-operates with the Department of Art History in offering combined B.A. and B.A. (Honours) degrees in Art History and Architecture. (For details see p. 92.)

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## The Organization of the School

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The basic component of architectural education is the design studio. The Core Committee is responsible for the co-ordination of studio courses with core courses and electives, and the Curriculum Committee is responsible for academic planning in the school, and for the vitality and general thrust of course contents.

The interdisciplinary nature of certain subject areas will be of interest to students outside the School of Architecture. The involvement of faculty and students from other disciplines in these courses is actively encouraged. At the same time, Architecture students are encouraged to take courses in other disciplines across campus as part of their educational program.

The following are the general areas of study related to the curriculum of Architecture as represented in the School's program:

History and Theory; Human Sciences; Environmental Sciences.

Structures; Environmental Controls; Materials and Methods of Construction; Design Economics.

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## Bachelor of Architecture Degree Program

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The Bachelor of Architecture degree is awarded on the successful completion of a five-year program of studies. The curriculum at Carleton is expected to provide the



Urban Architecture, Planning and Design; Professional Practice.

Computer Craft and Modelling; Design Methodology; Visual Studies.

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### Academic Clubs and Societies

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SAAS, *School of Architecture Association of Students*, organizes special events several times a year, and is a focus for student discussion.

*Forum Lecture Series*: The School of Architecture plans and organizes a series of public lectures on contemporary issues in architecture and related fields.

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### Regulations

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The following regulations apply to all students enrolled in the School. Students are urged to seek the advice of their instructors on all questions about the regulations, and in particular before taking any action affecting promotion and probation, withdrawal, transfer of credit, appeals and review of grades.

#### Student Responsibility

The student is responsible for knowing the regulations of the School of Architecture and for complying with them. Any exceptions to the regulations must be approved in writing by the School of Architecture Committee on Standing, Promotion and Awards. Routine approval of a records form (for example, a registration contract or course change form) does not constitute approval of an exception.

#### Timetables

All courses in the School of Architecture are offered in the Day division, and are scheduled in the timetables of the University.

#### Requests and Appeals

The School of Architecture Committee on Standing, Promotion and Awards is responsible to the Faculty Board for considering students' requests for special consideration regarding the regulations. Appeals must be made in writing to the Chairman of that committee.

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### Admission and Readmission Requirements

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#### First Year

To be eligible for admission to the First year of the program of studies leading to the Bachelor of Architecture degree, the applicant must have passed the Qualifying-University-year examinations at Carleton University in five credits with a minimum grade-point average of 4.0 and a grade of C- or better in Mathematics and in Physics; or must present the Ontario Secondary School Honour Graduation Diploma with a minimum 60% average and including Functions, Calculus and Physics.

Refer to the section on Admissions in the general regulations of the Calendar for additional admissions information (pp. 29-34).

#### Selective Admission

It should be noted that the number of student spaces in the school is limited. Because of this, it may not be possible to grant admission to all applicants who meet the foregoing requirements. Admission will therefore be on a selective basis with preference given to those candidates who show the highest promise of success in the program through a portfolio of creative work, and academic grades. Members of the Admissions Committee of the School of Architecture are available by appointment during the academic year to answer enquiries regarding the School's program.

#### Advanced Standing

Applications for admission with advanced standing to the Second or subsequent years of the program leading to the Bachelor of Architecture degree will be evaluated on an individual basis. Advanced standing for academic subjects completed at another university or college may be accepted if the subject is recognized as the equivalent of a corresponding subject offered at Carleton, or for a subject particularly appropriate to a degree in architecture. Advanced standing may be recognized at any time in the program.

#### Readmission

Students who have been absent from the University for two consecutive Fall/Winter sessions and the intervening Summer session (except students holding a Letter of Permission from the Carleton School of Architecture) are required to apply for readmission before registration.

Former students who have forfeited their undergraduate status must request readmission by writing to the Director of the school and the request must be accompanied by an updated portfolio of work. The decision whether or not to readmit will be made by the Faculty Board.

Applications for readmission (obtainable from the Admissions Office) must be filed before July 1 for the Fall/Winter session.

#### Proficiency in English

Since the instructional language of the University is English, applicants must be able to understand and be understood in English, both written and oral. Applicants whose mother tongue is other than English must clearly exhibit this ability. See p. 29.

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### Registration

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#### Registration

In order to facilitate more effective academic planning for the following school year, students must declare their intention to continue in the program by July 1.

Students who have been absent from the University for one full Fall/Winter session (September through April) should notify the School by July 1 of their intention to register for the following Fall/Winter session.

Students are to complete their course registration by the registration periods shown for the session or term in the schedule for the Academic Year on pp. 11-12.

#### Late Registration

Registration after the registration period incurs a late registration fee. Registration is not permitted after the late registration period.

Course Credit Value

Credit values are indicated against course descriptions. Courses marked ★ are half credit courses, indicated 0.5 on record documents.

Course Load

The program in the School of Architecture is based on a course load of six full-credit equivalents for five years.

First and Second Years

During the first two years of the program in Architecture, because of the limited number of student spaces, all students (with the exception of those students admitted with advanced standing or those who are repeating course work) will be required to undertake the full course load as set out in the course outlines on pp. 306-308 or as modified by these regulations.

Student Records

Incorrect address information will delay the receipt of awards, examination results and changes in academic status. Students must notify the School and the Divisional Registrar's Office immediately of any change in permanent address.

Promotion and Continuation

Standing in Courses

Standing in courses will be determined by the School of Architecture. Standing in courses will be shown by alphabetical grades. The system of grades used, with corresponding grade points, is as follows. Supplemental examinations for courses are graded by the same scale.

A+ 12	B+ 9
A 11	B 8
A- 10	B- 7
C+ 6	D+ 3
C 5	D 2
C- 4	D- 1

The following percentage equivalents are published solely to assist other institutions in interpreting letter grades. Students are advised that these equivalents have no internal application.

A+ 90-100	B+ 77-79
A 85- 89	B 73-76
A- 80- 84	B- 70-72
C+ 67- 69	D+ 57-59
C 63- 66	D 53-56
C- 60- 62	D- 50-52

Other notations are as follows:

**Aeg**  
Pass standing granted under special circumstances. Aegrotat standing is granted only by a faculty committee, in response to a student's application. (See Deferred Final Examinations, p. 43.)

**Aud**  
Indicates course is not being taken for academic credit.

**F**  
Failure. No academic credit.

**FNS**  
Failure without access to supplementals because of incomplete term work or unacceptably low standing. No academic credit.

**Abs**  
Absent from final examination. No supplementals. No academic credit. Abs is usually equated to failure.

**Wdn**  
Withdrawn in good standing. No academic credit.

**Def**  
Indicates deferral of final grade has been approved by a faculty committee. (See Deferred Final Examinations, p. 43.)

**Ch**  
Credit granted under Challenge for Credit policy.

**Passing Grades**  
The passing letter grade in design studio and in research thesis projects is C-. The passing letter grade in other courses is D-.

Computation of Averages

The 12-grade-point system is set out above. The grade points earned in any specific course are determined by multiplying the grade points corresponding to the grade by the credit value of the course. Thus an A+ in a half-credit course will earn the student six grade points, while A+ in a two-credit course would be worth 24 grade points.

Grade-point averages are calculated by dividing the total accumulated grade points by the total credits.

Promotion

Students who achieve a passing grade in all courses and have the necessary grade-point averages will be promoted to the next year of the program. In arriving at the grade-point average, only the grades of the courses required to make up a full program in that year will be averaged.

**Design Studio Courses (First to Fourth Years)**  
In the design studio courses a grade-point average of 4.0 (C-) is required for automatic promotion. A student with a grade-point average below 3.5 will not be eligible for promotion and the student will be placed on probation. Students who, during one year, achieve a passing mark in one term and a D+, D, or D- in the other, and whose grade-point average in studio is at least 3.5 will have their studio portfolio reviewed by the faculty members teaching in that year (in consultation with the studio co-ordinator of the following year). In these cases, a discretionary decision will be made to promote or to prescribe further study before promotion. The student will be informed of this decision by the faculty members involved, in order to ensure that the student understands the deficiencies in his or her work and the suggestions that have been made to overcome them.

**Design Studio Courses (Fifth Year)**  
Awarding in studio does not apply to Fifth year (see pp. 305-306).



### All Other Courses

In the combined courses without design studio, a grade-point average of 3.5 or better is required.

### Design Studio Course Sequence

During the first four years of the program, the Fall-term course must be taken before the Winter-term course.

### Deficiencies and Probation

A student who in one program year has failed a course or courses valued at more than 1.0 credit or whose grade-point average in studio or non-studio courses is below 3.5 (after any supplemental examinations), will be considered to have failed the year and, if given permission to return, will return as a student on probation.

Students who are not on probation but who have up to 1.0 credit deficiency may proceed to the next higher year, except to Fifth year. Students with more than 1.0 credit deficiency are not permitted to register in core courses of the higher year.

Students without clear standing will not be permitted to register in the Fifth-year core courses.

Core course deficiencies may only be carried into the next higher year. If these deficiencies are not cleared, students may not take core courses in the succeeding year.

A student on probation may not register for core courses in any higher year, but every effort will be made, on an individual basis, to help students develop their potential during the probation period.

In order to return to regular status, students on probation must repeat each failed course and any other course in that year where their grade was less than C-, except for electives, where a substitute course may be taken. Students may register in a course only once for the purpose of clearing probation, and must achieve a grade of C- or better. If the required grade is not achieved, the student will forfeit undergraduate status.

A student who has cleared probation in the past, but whose grades in a subsequent year would lead to a second probation will forfeit undergraduate status.

A student who has forfeited undergraduate status must spend one academic year away from School before applying for readmission.

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## Examinations

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General regulations on examinations are on pp. 43-44.

### Supplemental Examination Privileges

A student may not write a supplemental examination in a course graded *FNS* or *Abs*. If a supplemental examination is failed, the student must repeat the course before writing another examination in it. Supplemental examinations must be written at the next supplemental examination period. Supplemental examinations are not offered in design studio.

Application to write supplemental examinations must be made at the appropriate Divisional Registrar's Office. Application must be made by the designated date (see Examination Charges, p. 46).

### Grade-Raising Examinations

Students may, on application, write grade-raising examinations in courses already passed, and in which supplemental examinations are offered.

The grade awarded subsequent to a grade-raising examination supersedes the original final grade. A grade-raising examination in a course can be written only once and at the next scheduled examination period.

### Review of Grades

Students are entitled to a review of a final grade. Those wishing to receive such a review should enquire at the appropriate Divisional Registrar's Office, after which they may wish to make a formal application for this review. Applications must be filed with the appropriate Divisional Registrar's Office within 14 days of the official release of grades for the term.

Requests for review are dealt with by the Director in consultation with the appropriate faculty member(s).

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## Evaluation

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To gain standing in a course, a student must meet the course requirements for attendance, term work and examinations.

Instructors will inform their classes in writing before the last date for course change of the elements that will contribute to the final grade and their weighting, including attendance, class participation, essays, tests and final examinations. Also stated will be the availability of supplemental and grade-raising examinations, and the method of computing a grade revised by these examinations.

### Retention of Work and Portfolio Reviews

Keeping a good portfolio is a most important part of architectural education. A portfolio represents a record of the student's progress and design experience over the years. It is an indispensable requirement for any job application in the future. A portfolio is started in First year and continues to expand until graduation. The School, therefore, requires that each student produce reductions (normally 8½ x 11 inch reproductions, colour or black and white and/or slides) of their work. One copy of the work should be put in the student's portfolio and the other turned in to the instructor for retention in the School's archives. (This facilitates retrospective exhibitions of work, accreditation, publications and any future references for pedagogic purposes.) Original work is the property of the students, but the School retains the right to keep work of merit for up to two years after the date of submission. The School will make every effort to preserve the work in good condition, and will give authorship credit and take care of its proper use.

At the end of the Third year of the program, each student will present, to an external committee of examiners, a portfolio of original work in design studio for the preceding two years.

The committee's task will be to assist the faculty's evaluation, vis-a-vis professional and external academic standards. The committee will review the work put forward by the tutors in the design studio and will convey their opinions to the faculty.

The External Review Committees will include two highly qualified professionals/academics, the Director of the

School, and the studio co-ordinators of Second and Fourth years.

The External Review Committee advises the year faculty concerning discretionary promotion cases (see Promotion, p. 302).

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### Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43).

### Application to Graduate

Students expecting to graduate in the Spring must make application on the form available in the Divisional Registrar's Office by February 1; those expecting to graduate in the Fall by September 1; and those expecting to graduate in February, by December 1.

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### Degrees with Distinction

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Upon recommendation of the School of Architecture, the notation "with High Distinction" may be made on the academic records of a candidate for the degree of Bachelor of Architecture. To be considered for this recommendation, the candidate is expected to obtain a grade-point average of at least 10.0 in the course requirements of final year. In addition, the student must obtain a grade-point average of at least 7.8 in the design studio courses of the First to Fourth years inclusive, and at least 7.8 in the other course requirements of the First to Fourth years inclusive.

Upon recommendation of the School of Architecture, the notation "with Distinction" may be made on the academic records of a candidate for the degree of Bachelor of Architecture. To be considered for this recommendation, the candidate is expected to obtain a grade-point average of at least 8.0 in the course requirements of final year. In addition, the student must obtain a grade-point average of at least 6.6 in the design studio courses of the First to Fourth years inclusive, and at least 6.6 in the other course requirements of the First to Fourth years inclusive.

For transfer students, degrees "with Distinction" and "with High Distinction" will be awarded at the discretion of the Faculty Board.

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### Scholarships and Awards

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The faculty of the School will recommend students to the Senate for scholarships and awards available to the School. For this purpose an overall grade-point average including the design studio courses will be calculated. The design studio grade, the course grade-point average or the overall grade-point average will be used as is most appropriate for the nature of the award.

Special prizes are also given to acknowledge distinguished work.

Students admitted with advanced standing whose grade-point average may not represent a true measure of their worth will be given individual consideration.

See Awards and Financial Assistance, p. 411.

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## Course Requirements

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### Core Courses

#### 1. Design Studios

(a) The heart of the architectural program is the design studio. Design projects are the primary learning vehicle, supported by lectures, seminars and tutorials.

Design studio courses are for 1.5 credits a term in the first four years. In Fifth year, design studio or research thesis is for 2.5 credits per term. Design studio courses are taught by lectures, seminars and individual tutorial instruction. The design studio courses tend to require more individual work than might be indicated by the scheduled contact time.

(b) As a special option, the program normally offers Visiting Critics' Studios intended to provide students from Second to Fifth years with an opportunity to work with distinguished teachers and architects from Canada and around the world. The Visiting Critic presents the design problem and works closely with a faculty member who co-ordinates the studio. Admission to the studio will necessitate clear academic standing and a potential for independent work. Students will be allowed a maximum of two terms in Visiting Critics' Studios. The Visiting Critics' Studio offers an opportunity for added stimulation to the program. It is expected that the reviews will extend the architectural dialogue within the School and that the resulting work will be exhibited.

#### 2. Core Courses

Core courses are the mandatory part of the program, providing the required academic and professional foundation for studies in architecture. While more extensive in the lower years, they extend across the entire program and are as designated in the course charts, pp. 306-308 and in the description of courses offered, pp. 308-313.

#### 3. Theories Electives

This is a selection of courses that broadly sets out a theoretical context for architecture. Theories electives are selected from the following courses:

##### Architecture

- 76.205★ Theories of Landscape Design
- 76.208★ Design of Cities
- 76.209★ Theory of City Form
- 76.302★ History of Canadian Architecture
- 76.307★ History of Architectural Theory
- 76.308★ Origins of Modern Architecture
- 76.391★ Selected Topics: Studies in Theory and History of Architecture
- 76.408★ Modernism in Architecture
- 76.440★ Directed Studies Abroad: Theory

##### Art History

- 11.286★ Art and Ideas: From Ancient Greece to the Twentieth Century
- 11.287★ Art and Ideas: The Twentieth Century
- 11.305★ American Architecture
- 11.350★ British Art and Architecture: 1600-1850

##### Classics

- 13.235 Ancient Science and Technology

Electives may also include other courses in the field that become available and are approved by the Faculty Board. A list of available approved courses will be published at registration.



One and a half credits in theories electives must be passed before the end of Fourth year. Students are free to choose in what terms they take the courses. With the exception of Second year, additional theories electives may be taken as approved electives.

**Note:**

Prerequisites to core courses may not be waived except on appeal to the Committee on Standing, Promotion and Awards and with the permission of the Faculty Board.

## Elective Courses

### 1. Workshop Courses

Workshop courses are scheduled for one term at six hours a week of seminar and/or individual work, including tutoring, and receive a half credit.

### 2. Approved Electives

A list of approved elective courses offered by the School and by other departments of the University will be published at registration.

## Course Program

The program of study is outlined in the following charts and detailed course descriptions appear on pp. 308-313, and listed under "Courses and Workshops Offered."

All programs are subject to change according to the final availability of resources at the time of registration.

## Fourth-Year Directed Studies Abroad

When circumstances allow, a Studies Abroad option is available to students who are enrolled in the Fall term of the Fourth year of the program. This study takes place in a location away from Ottawa and usually outside Canada. The location is selected for its architectural and urban relevance to the state of the art, and is carried out under the direction of a faculty member of the school. The study option is available to students with clear standing to the Fourth year of the program.

## Fifth Year

### 1. General

Students without clear standing will not be permitted to register in Fifth-year core courses.

Before the end of the Fourth year of the program, students will enter into discussions with faculty members regarding their Fifth-year courses.

### 2. Design Thesis 5B

The last project in the design studio sequence represents a special opportunity to develop independent work, where issues of content become synthesized with the student's formal skills under the supervision of a chosen tutor. Every effort will be made to provide all students with their first choice of tutor, but this may not always be possible. (For prerequisites see *Thesis Preparation*, below.)

The Design Thesis 5B studio will be co-ordinated administratively, but each student will work with his or her tutor. Mid-term reviews will be scheduled, at which point a student may be advised to withdraw. Distinguished guests will be invited for final reviews. Two weeks after final reviews, students will present their submissions to their committee in reduced, bound format. The final grade is dependent upon this submission. Original work will be exhibited during the school's awards ceremony.

A project graded *D+*, *D*, *D-* or *F* is a failure.

## 3. Research Thesis

It is also possible to undertake a Research Thesis over a period of one or, in exceptional cases, two terms. The Research Thesis is normally in substitution of Design Studio 5A (Fall term, Fifth year). A project in this area may involve the investigation of a building, or research into a topic related to architecture. The student must demonstrate an adequate knowledge of the subject area chosen.

In this option, the student will work closely with a chosen tutor to develop an in-depth investigation on his or her chosen topic. The development of a conceptual relationship between a Research and a Design thesis is encouraged. (For prerequisites see *Thesis Preparation*, below.)

A project graded *D+*, *D*, *D-* or *F* is a failure. A student who has received a grade of *F* is not eligible to reregister in the Research Thesis option. A student who undertakes a two-term project and who receives a grade of *D+* or lower on the first term's work may not be allowed to continue with the Research Thesis in the following term.

## 4. Thesis Preparation

Students are required to complete course Architecture 76.452★, Thesis Preparation, in the Winter term of Fourth year. During the term, students will be expected to prepare material for their Design Thesis (Winter mandatory) and for their Research Thesis (Fall elective). In either case, students will work informally with their chosen tutor(s) during the term and, after passing the course, will be expected to prepare a written proposal(s) for submission to a Thesis Committee two weeks after the last day of handing in term assignments at the end of the Fourth year of the program.

The student proposals, in order to be considered for approval, must be submitted on the appropriate forms designated for Design Thesis and Research Thesis respectively. The proposals constitute a declaration of intentions and contain information relevant to the type of project, including the proposed tutor's agreement in writing.

The Thesis Committee will review the proposals and provide advice to be acted upon during the Summer. The proposals should come back to the committee in their revised form by the second Friday in August at the latest. The committee will then evaluate the proposals and if approved, will strike an advisory committee that will work with the student in his or her project and will be responsible for its final evaluation.

(a) In the case of Research Thesis proposals (Fall elective), the Thesis Committee will approve or reject the proposals on the basis of the following criteria:

- (i) appropriateness of the topic to the intentions of the program;
- (ii) evidence of a strong academic record over the whole program;
- (iii) high standing in course work relevant to the project;
- (iv) favourable assessment of the student's capability to carry out the project.

The committee will, before registration, advise the student of its decision and provide counselling for students whose projects are not accepted.

A student whose proposal is rejected may, at the discretion of the committee, submit a revised proposal to the committee in time for re-evaluation before the last day for late registration in the Fall term. If the decision to reject the proposal stands, the student must then change the course registration to the Design Studio Option 5A. The committee's decision at this point is final.

(b) In the case of Design Thesis proposals (Winter mandatory), the committee will determine whether a student may register in course Architecture 80.458, Design Thesis 5B.

A student whose proposal is deemed inadequate may, at the discretion of the committee, submit a revised proposal to the committee in time for re-evaluation before the last day for late registration in the Fall term, or may be asked to submit a different proposal after spending an academic year away from the School.

Independent Study

A student enrolled in the Bachelor of Architecture program may propose, and may be permitted to undertake an independent study in lieu of approved elective or workshop elective course for one-half credit in each of Third, Fourth and Fifth years.

The purpose of this provision is to allow more flexibility for students to pursue a line of investigation in their own way, free of normal constraints of timetable and University locale. The independent study at the undergraduate level is to make no demands on University faculty other than those required for approval and evaluation.

In certain cases, with the approval of the department in which they are registered, graduate students enrolled in another program at the University may be permitted to enrol in an independent study course under the direction of a member of the faculty of the School. The procedures and conditions will be detailed and approved jointly by the student, the department and the assessor in the school.

Serious scholarship and research are expected and proper documentation will be required. In the case of students in Architecture, registration for the study will be subject to the following conditions:

- 1. The student's standing must be clear with no deficiencies in core courses.
- 2. The student will register for an independent study course in the term or session during which the work is to

be completed. The student must submit the proposal in writing to the assessor prior to registration, outlining the objectives and direction of the study, the time and locale, resources available, submission date and other pertinent information.

3. The student must have obtained the prior agreement of a member of the teaching staff to act as assessor for the study. The student must also obtain the Director's approval of the proposal prior to registering in the course. The staff member will be responsible for evaluation. The student's assessor will deliver the completed and approved proposal to the Records Office of the School of Architecture to be filed with the student's course records.

General Information

Materials, Supplies and Field Trips

The program in architecture, particularly the design studio courses, requires that the student produce large quantities of drawings and models, as well as ozalid prints and photostats, and requires use of other photographic media, reproductions of drawings, reports, etc., all of which can be costly.

Equipment for drawing, photography, etc., should be regarded as an investment, because good tools are essential and last a long time if properly cared for. An equipment list is provided as a guide to the entering student. A good quality 35mm. camera is a very useful but not mandatory item on the list and most students find they use it to such an extent that they wish to purchase one during the first year or two of the program.

Field trips to other cities are a part of the program. The School usually absorbs part of the cost of transportation but students are expected to meet most other expenses while away.

Experience indicates that the student should budget about \$1,500 for materials, equipment and field trips per year, not including a camera.

First Year

Fall Term	Winter term
76.120★ Introduction to Architectural History	76.121★ Introduction to Western Architecture
77.113★ Structures in Architecture	77.130★ Building Construction 1
79.111★ Computer Craft	79.115★ Mathematics in Architecture
80.111 Design Studio 1A	80.112 Design Studio 1B

Note:  
Architecture 80.111 and 80.112 each have a course value of 1.5 credits.



**Second Year**

## Fall Term

## Winter Term

76.203★ The Fundamentals of Architectural Vocabulary  
 77.205★ Environmental Controls 1  
 77.213★ Structural Analysis in Architecture

76.204★ The Physical Morphology of the City  
 77.230★ Building Construction 2  
 1 Approved Elective★

80.211 Design Studio 2A

80.212 Design Studio 2B

**Notes:**

1. Architecture 80.211 and 80.212 each have a course value of 1.5 credits.

2. It is recommended that the Second-year elective be chosen from courses offered by other departments of the University. However, a list of courses offered by the school and designated as suitable for this purpose will also be available.

3. Because of changes in the timing and numbers of Mathematics in Architecture and Computer Craft (formerly Algorithmic Problem Solving) courses, students following irregular programs may find an apparent year sequence that misses one or both of them. All students must pass both courses before they will be promoted to the Fourth year of the program.

**Third Year**

## Fall Term

## Winter Term

77.313★ Structural Design in Architecture  
 1 Theories Elective★ or 1 Approved Elective★  
 1 Workshop Elective★

77.305★ Environmental Controls 2  
 1 Theories Elective★ or 1 Approved Elective★  
 1 Workshop Elective★

80.304 Design Studio 3A

80.306 Design Studio 3B

**Notes:**

1. Students must take at least 0.5 credits of theories electives before the end of the Third year.

2. Architecture 80.304 and 80.306 each have a course value of 1.5 credits.

**Fourth Year**

## Fall Term

## Winter Term

2 Theories and/or Approved Electives  
 (1.0 credit total)  
 1 Workshop Elective★

76.452★ Thesis Preparation  
 1 Theories Elective★ or 1 Approved Elective★  
 1 Workshop Elective★

80.403 Design Studio 4A

80.405 Design Studio 4B

**Notes:**

1. 3.0 credits of electives, of which 1.5 are to be theories electives, must be passed before the end of the Fourth year.

2. Architecture 80.403 and 80.405 each have a course value of 1.5 credits.

Fifth Year

Fall Term	Winter Term
1 Theories Elective★ or 1 Approved Elective★	78.320★ Professional Practice
80.457 Design Studio 5A or 80.460 Research Thesis 5.1	80.458 Design Thesis 5B or 80.461 Research Thesis 5.2
<i>Note:</i> Architecture 80.457, 80.458, 80.460 and 80.461 each have a course value of 2.5 credits.	

Course and Workshops Offered

Architecture 76.120★ Core Course  
**Introduction to Architectural History**  
An introductory survey of major world traditions in architecture, concentrating on the organizing principles and formal properties of buildings. The course covers ancient and medieval architecture in Europe, Asia and America. Day division, Fall term: Lectures three hours a week.

Architecture 76.121★ Core Course  
**Introduction to Western Architecture**  
A continuation of Architecture 76.120★ with the same emphasis, examining European and American architecture from renaissance to modern. Day division, Winter term: Lectures three hours a week.

Architecture 76.203★ Core Course  
**The Fundamentals of Architectural Vocabulary**  
An exploration of architecture as the embodiment of ideas, language and meaning. Ideas are considered in relation to broad conceptual frameworks contrasting various theoretical approaches. Language is examined in terms of the elements, relationships, and ordering ideas within architecture. Consideration of the process of experiencing architecture and the levels of meaning in architecture complete the content undertaken in this course. Day division, Fall term: Lectures three hours a week.

Architecture 76.204★ Core Course  
**The Physical Morphology of the City**  
A historical and theoretical description and comparative analysis of the physical morphology of cities. The primary structural, spatial and formal organization and elements that characterize the morphology of cities are studied in terms of their historical and contemporary significance for architecture and urban design. Day division, Winter term: Lectures three hours a week.

Architecture 76.205★ Theories Elective  
**Theories of Landscape Design**  
An introductory course intended to bring to the student an awareness of landscape architecture as the total organization of outdoor space. A consideration of cultural, economic and political factors provides a frame for reference for the understanding of spatial organization in cities, towns and other areas of human settlement. Day division, Fall term: Lectures three hours a week.

Architecture 76.206★ Elective Course  
**Introduction to Industrial Design**  
Offered in the School of Industrial Design as Industrial Design 85.100★.

Architecture 76.208★ Theories Elective  
**Design of Cities**  
A study of the architecture of the city. This course examines the form, meaning and qualitative experience of urban composition. Significant artifacts in the development of Western European civilization are analyzed and used as a basis for exploring the shape and values of North American cities. See also related workshop, Architecture 76.328★. Day division, Fall or Winter term: Lectures three hours a week.

Architecture 76.209★ Theories Elective  
**Theory of City Form**  
This course examines current design attitudes affecting the physical morphology of cities. These attitudes are studied from the standpoint of the relationship between practical and functional aspects on the one hand, and man's symbolic and psychic perceptions on the other. Day division, Fall or Winter term: Lectures three hours a week.

Architecture 76.211★ Elective Course  
**Industrial Design Analysis**  
Offered in the School of Industrial Design as Industrial Design 85.101★.

Architecture 76.212★ Elective Course  
**Visual Design**  
An analytical study of design principles including arrangement, composition, form, order, rhythm, colour and texture. Day division, Fall or Winter term: Lectures three hours a week.

Architecture 76.302★ Theories Elective  
**History of Canadian Architecture**  
Canadian architecture from the seventeenth century to the present day, covering both stylistic and technological development with an emphasis on the latter. Building styles, methods and materials are considered in the context of the social and economic conditions of the time with a concentration on the analysis of the architectural elements of design and construction methods. (Also listed as Art History 11.302★.) Day division, Fall or Winter term: Lectures, seminars three hours a week.

Architecture 76.307★ Theories Elective  
**History of Architectural Theory**  
An exploration of architectural intentions in the early period of Western history, with special emphasis on Renaissance treatises and ideas. Architectural intentions are examined in relation to shifting world-views, forming



the basis of historical interpretation.  
Day division, Fall term: Lectures three hours a week.

**Architecture 76.308★ Theories Elective**  
**Origins of Modern Architecture**

A continuation of Architecture 76.307★ with special emphasis on the European context from the seventeenth to the early nineteenth century. This crucial period marks the beginning of the modern era and provides a key for a fuller understanding of the problems facing architecture today.

Day division, Winter term: Lectures three hours a week.

**Architecture 76.328★ Elective Course**  
**Workshop: The Architecture of Urban Space**

This workshop undertakes design explorations that are directed towards the search for aesthetic form and meaning in urban space, with particular application to the Canadian context. It is project-oriented and refers to precedents as established in Architecture 76.208★.

Prerequisite: Architecture 76.208★ or permission of the School.

Day division, Fall or Winter term: Six hours a week.

**Architecture 76.391★ Elective Course**  
**Selected Topics: Studies in Theory and History of Architecture**

The course focuses on one specific aspect of architecture in the area of theory and history. Course offerings change from year to year.

Prerequisite: Permission of the School.

Day division: Fall or Winter term.

**Architecture 76.392★ Elective Course**  
**Selected Topics: Workshops in Theory and History of Architecture**

Workshop focuses on one specific aspect of architecture in the area of theory and history. Workshop offerings change from year to year.

Prerequisite: Permission of the School.

Day division, Fall or Winter term.

**Architecture 76.408★ Theories Elective**  
**Modernism in Architecture**

This course examines major critical perspectives as they are applied to architecture as a fine art. The debate between classicism and romanticism with consideration of its cultural roots establishes the basis of the course.

Day division, Winter term: Lectures three hours a week.

**Architecture 76.423★ Elective Course**  
**Society and Shelter**

An examination of buildings and shelter as human and social products. Major areas of concern include the impact of built form on social behaviour and thought; the perception of the built environment and the design and construction of buildings as social processes. (Also listed as Sociology 53.339★.)

Day division, Fall or Winter term: Lectures three hours, seminars three hours a week.

**Architecture 76.425★ Elective Course**  
**Workshop: User Analysis and Building Performance**

Seminars, individual and team projects to develop skills in the analysis of building performance. Examination of occupancy analysis, safety and risk assessment, post-occupancy evaluation, and social impact assessment.

Day division, Fall and/or Winter term: Six hours a week.

**Architecture 76.440★ Theories Elective**  
**Directed Studies Abroad: Theory**

A survey of the architectural and urban history of a specific culture. These discussions address the present reality of a country, region or city being visited by the Fourth year of the program.

Day division, Fall term: Lectures three hours a week.

**Architecture 76.452★ Core Course**  
**Thesis Preparation**

This course ensures the proper preparation of students for the undertaking of Research and/or Design Theses during the Fifth year. Input is provided in the form of lectures by several faculty members on topics related to the nature of the thesis, methods of research, and interpretation. Debate and discussion of major issues pertaining to architecture and arising from the students' concerns is encouraged. A development of students' critical skills and personal positions is expected.

Day division, Winter term: Lectures and seminars three hours a week.

**Architecture 76.488★ Elective Course**  
**Independent Study**

**Architecture 77.113★ Core Course**  
**Structures in Architecture**

An introduction to structural planning, including a historical survey of structural systems and details and the study of the factors involved in the synthesis of a suitable structural scheme. An introduction to the science and the structural properties of materials.

Day division, Fall term: Lectures three hours a week, laboratory two hours a week.

**Architecture 77.130★ Core Course**  
**Building Construction 1**

A study of design and construction processes. An introduction to drawings and specifications, followed by a detailed study of construction techniques used by the principal building trades to translate the design into a building. Emphasis is placed on the proper selection of sub-systems and on the factors that affect the quality of construction.

Day division, Winter term: Lectures three hours a week.

**Architecture 77.205★ Core Course**  
**Environmental Controls 1**

Design for environmental control; comfort parameters; enclosure performance.

Day division, Fall term: Lectures three hours a week.

**Architecture 77.213★ Core Course**  
**Structural Analysis in Architecture**

Statics and strength of materials. Mechanical properties of structural materials. Application of statics and strength of materials to problems of structural elements in the context of total building structures.

Day division, Fall term: Lectures three hours a week, laboratory two hours a week.

**Architecture 77.230★ Core Course**  
**Building Construction 2**

A study of building enclosures for the Canadian climate. A review of the principles of heat transfer, psychrometry and air movement. The techniques used to control the movement of heat, water and air through the enclosure. The application of these techniques to roofs and windows

and to wood, concrete, masonry and metal walls.  
Day division, Winter term: Lectures three hours a week.

Architecture 77.300★ Elective Course

**Lighting for Architecture**

Specifications for lighting based on visual performance and subjective preference. Appropriate design techniques for daylight and electric light assessed by model and full-scale installations. Topics may include: derivation of units, scalar and vector luminance, subjective appraisal and preferred lighting configurations, I.E.S. recommendations, working plane and illuminance design, display lighting and exterior lighting.

Day division, Fall or Winter term: Lectures three hours a week.

Architecture 77.302★ Elective Course

**Acoustics in Architecture**

Recapitulation of fundamentals. Sound in enclosures, including interior design of auditoria and special applications. Sound reproduction and reinforcement systems. Acoustic privacy and protection, sound control in buildings, materials for noise control, community noise, industrial noise. Acoustic measurements and instrumentation.

Day division, Fall or Winter term: Lectures two hours, laboratory two hours a week.

Architecture 77.303★ Elective Course

**Energy and Form**

The purpose of the course is to provide the student with a body of knowledge concerning energy as a criterion in decision-making for architectural design. Specifically, the course covers conventional energy resources and the state of the art of alternative energy resource systems with respect to building shape, size, materials, openings, orientation, siting and use.

Day division, Fall or Winter term: Lectures three hours a week.

Architecture 77.304★ Elective Course

**Workshop: Energy and Form**

Study of the relationship between environmental factors, energy and architectural form. Emphasis is placed on explorations into ways in which buildings and building elements can be planned and designed so as to take advantage of natural cycles in order to minimize the need for supportive energy inputs.

Prerequisite: Architecture 77.303★ or permission of the School.

Day division, Fall or Winter term: Six hours a week.

Architecture 77.305★ Core Course

**Environmental Controls 2**

Continuation of Architecture 77.205★ with additional coverage of building servicing and the interaction of environmental conditions with space enclosures. Aspects of the course are extensively reinforced by applications in design projects.

Day division, Winter term: Lectures three hours a week, problems three hours a week.

Architecture 77.313★ Core Course

**Structural Design in Architecture**

Behaviour of structural elements and simple systems under load conditions of increasing severity. Simplified design of structural elements and systems. Comparative estimation of stresses and deformations. Use of structural testing laboratory to demonstrate behaviour path to failure.

Prerequisites: Architecture 77.113★ and 77.213★

Day division, Fall term: Lectures three hours a week, laboratory two hours a week.

Architecture 77.314★ Elective Course

**Structural Analysis**

Offered in the Department of Civil Engineering as Engineering 82.420★.

Architecture 77.316★ Elective Course

**Design of Structural Steel Components**

Offered in the Department of Civil Engineering as Engineering 82.425★.

Architecture 77.320★ Elective Course

**Industrialized System Building: Principles, Classification and Selection**

A study of the principles of this approach to design and manufacture of buildings. A brief survey of the historical factors forcing changes in the building industries of the world. This is developed by a review of existing systems using the technique of multi-parameter classification and selection by profile matching.

Day division, Fall or Winter term: Lectures three hours a week.

Architecture 77.326★ Elective Course

**Workshop: Space Enclosure Systems**

The exploration of space enclosure systems for a wide range of environments.

Prerequisite: Architecture 79.320★ or permission of the School.

Day division, Fall or Winter term: Six hours a week.

Architecture 77.330★ Elective Course

**Performance of Building Materials**

Study of materials available for building, with emphasis on their structure, properties, application and sustained performance over the life of a building.

Day division, Fall or Winter term: Laboratories, lectures, field trips four hours a week.

Architecture 77.335★ Elective Course

**Workshop: Materials Application**

Application of building materials, including the forming of building parts and the design of joints for performance and assembly. Practical constructions using new technology are emphasized.

Prerequisite: Architecture 77.330★ or permission of the School.

Day division, Fall or Winter term: Six hours a week.

Architecture 77.350★ Elective Course

**Design Economics**

Principles of building economics. Determinants of building costs and their prediction. Discussions on uncertainty and investment economics. Systems and techniques of creative cost control for buildings during schematic design, design development, construction document preparation and construction. Prime emphasis on the economic evaluation and choice from among alternatives during all phases of design process.

Day division, Fall or Winter term: Three hours a week.

Architecture 77.391★ Elective Course

**Selected Topics: Studies in Architectural Technology**

The course focuses on one specific aspect of architecture in the area of architectural technology. Course offerings change from year to year.

Prerequisite: Permission of the School.

Day division, Fall or Winter term.



Architecture 77.392★ Elective Course

**Selected Topics: Workshop in Architectural Technology**  
Workshop focuses on one specific aspect of architecture in the area of architectural technology. Workshop offerings change from year to year.

Prerequisite: Permission of the School.

Day division, Fall or Winter term.

Architecture 77.420★ Elective Course

**Structure and Form**

The challenge of space enclosure and spanning and its relationship to architectural form in history. Basic modes of force transfer and corresponding elements of structural form. Aggregation of form elements within the laws of geometry and physical stability. Discussion of physical-structural and form characteristics of a wide variety of structural types like cables, membranes, shells, arches, domes, trusses, slabs, folded planes, beams, frames and grids.

Day division, Fall or Winter term: Lectures three hours a week.

Architecture 77.424★ Elective Course

**Structural Planning in Architecture**

Structural planning process. Values, contexts, criteria and parameters of structural planning. Role of information and codes. Classification and comparative study of structural systems. Interaction and integration of structures with other building systems. Structural details. Structural planning data and guidelines. Case studies and exercises. (Also listed as Engineering 82.430★.)

Day division, Fall or Winter term: Lectures three hours a week.

Architecture 77.428★ Elective Course

**Workshop: Structure and Form**

Study of structural nature of non-conventional space enclosure systems like cable structures, membranes, shells, submerged structures, excavated structural forms and lunar structures.

Prerequisite: Architecture 77.420★.

Day division, Fall or Winter term: Six hours a week.

Architecture 77.440★ Elective Course

**Design for Construction**

A series of lectures and visits to building sites and subcontractors' plants to study the building process as it is affected by the architect's decision. Contractors and subcontractors participate. Analysis of decisions taken and methods used. Elemental cost analysis. Estimating costs from sketches.

Prerequisite: Architecture 77.330★ or permission of the School.

Day division, Fall or Winter term: Visits, lectures, seminars three hours a week.

Architecture 77.488★ Elective Course

**Independent Study**

Architecture 78.320★ Core Course

**Introduction to Professional Practice**

An overview of the practice of architecture. Topics include professional organization and conduct, the architect's services, business law, office organization and management, contract documents, building codes, contract management, cost control, accounting and site supervision. Presentation through lectures, guest speakers and case studies from professional practices and construction representatives in the area.

Prerequisite: Clear standing to Fifth year.

Day division, Winter term: Lectures three hours a week.

Architecture 78.323★ Elective Course

**Workshop: Landscape Architecture**

The objective of this course is to introduce the student to the practical significance of landscape elements as they relate to built-form by integrating structure and site.

Prerequisite: 76.205★ or permission of the School.

Day division, Fall or Winter term: Six hours a week.

Architecture 78.340★ Elective Course

**City Organization and Planning Processes**

An overview of the structure, form and functioning of Canadian and other countries' cities; methods for intervening in and directing processes and solving city problems: an introduction to urban problems, potentials and solutions. Topics include: physical infra-structure and forms of cities; urban facilities and networks; ecosystems, demography and social organization, and government and politics; quality of life, goals and perceptions of urbanites; urban management, development, regulation and codes, design, planning and policy-making. Lectures, guest lecturers, reading assignments.

Day division, Fall or Winter term: Three hours a week.

Architecture 78.345★ Elective Course

**Workshop: Urban Design**

A project-based workshop investigating current design attitudes and solutions affecting the physical morphology of cities. Students undertake formally sophisticated urban design projects, explore various procedures and discuss basic urban design ideas.

Day division, Fall or Winter term: Six hours a week.

Architecture 78.349★ Elective Course

**Workshop: City Organization and Planning Processes**

Interdisciplinary investigation, analysis and synthesis of the institutions, processes, environments and demography of Canadian cities. Seminars, guest lecturers, field investigations and individual and team projects.

Day division, Fall or Winter term: Six hours a week.

Architecture 78.350★ Elective Course

**The Development of Human Shelter**

Emphasis is on the background factors pertaining to housing in both industrial and Third-World countries; traditional and contemporary housing approaches; social housing and people's right to adequate housing. Overviews, case studies and guest lecturers.

Day division, Fall or Winter term: Three hours a week.

Architecture 78.391★ Elective Course

**Selected Topics: Urban Studies**

The course focuses on one specific aspect of architecture in the area of urban studies. Course offerings change from year to year.

Prerequisite: Permission of the School.

Day division, Fall or Winter term.

Architecture 78.392★ Elective Course

**Selected Topics: Workshop in Urban Studies**

Workshop focuses on one specific aspect of architecture in the area of urban studies. Workshop offerings change from year to year.

Prerequisite: Permission of the School.

Day division, Fall or Winter term.

Architecture 78.488★ Elective Course

**Independent Study**

Architecture 79.111★ Core Course

**Computer Craft**

This course is an introduction to architectural computing as a design, presentation and documentation medium; it emphasizes principles and techniques of application rather than details of the underlying technology. It is organized around extensive practical work using Carleton's computer graphics facilities (GKS) and the FORTRAN 77 programming language. No previous computer background is assumed. FORTRAN 77 is introduced, step by step, as the course progresses.

Day division, Fall term: Lectures three hours a week, laboratory one hour a week.

Architecture 79.115★ Core Course

**Mathematics in Architecture**

Mathematics as a way of thinking and an abstract process as this relates to architecture; a survey of the mathematics applicable to architectural technology and other courses in the program, including Euclidian, non-Euclidian and analytic geometries, probability and statistics. The course is developed as an exploration of mathematics as a discipline that can clarify many aspects of design and support a student's overall education.

Day division, Winter term: Lectures three hours a week.

Architecture 79.303★ Elective Course

**Workshop: Theatre Production**

A workshop course involving students in the design and fabrication of theatre productions, one of which is staged on campus. Visiting directors, designers, technical consultants and others are invited to discuss their approach to theatre production and to offer advice and criticism on student projects. There are visits to theatres and production facilities.

Day division, Fall or Winter term: Six hours a week.

Architecture 79.312★ Elective Course

**Problems in Computing**

Introduction to various types of non-numeric data, its representation within primary and secondary storage, and the manipulation of various representations. Comparative evaluation of languages for non-numeric problems. Student projects.

Prerequisite: Permission of the School.

Day division, Fall or Winter term: Lectures two hours a week, laboratory two hours a week.

Architecture 79.320★ Elective Course

**The Geometry of Form**

The development of a basic vocabulary of form through identification of the rules for combining and relating the minimal identifiable elements of geometric form. Investigation of the methodologies for changing those identities in order to generate entirely new forms. Study of planar and space geometries with special emphasis on polygons and polyhedra, their singular, close and loose-packing properties. Discussions on form; geometric operations, like vertex motion, folding, reciprocation and truncation. Text: Williams, *Natural Structure*.

Day division, Fall or Winter term: Lectures three hours a week.

Architecture 79.326★ Elective Course

**Workshop: Computer Applications**

Applications of existing computer programs and programming techniques to various architectural problems. Software, state of the art and applications are extensively covered. Project work may be user-orientated on the

basis of existing software or development of original work. Student projects.

Day division, Fall or Winter term: Six hours a week.

Architecture 79.328★ Elective Course

**Workshop: Computer Graphics**

Use of interactive graphics hardware systems and study of file structures for graphics processing. Developmental work leading toward computer-generated art as well as implementation of production-oriented user display software is encouraged. Student projects.

Prerequisite: Architecture 79.312★ or permission of the School.

Day division, Fall or Winter term: Six hours a week.

Architecture 79.330★ Elective Course

**Workshop: Co-operative Problem Solving**

Group training in the creative exchange and development of ideas; group problem-solving sessions focus on participation and roles, listening, itemized response, use of metaphor and analogy, forcefit, closure; follow-through techniques; visual brainstorming and generative graphics. Student project. Limited enrolment.

Day division, Fall or Winter term: Six hours a week.

Architecture 79.340★ Elective Course

**Workshop: Visual Design**

A workshop program to increase the student's capacity to visualize and communicate in several graphic media, and also to increase sensitivity to form, structure, space, texture and colour.

Day division, Fall or Winter term: Six hours a week.

Architecture 79.341★ Elective Course

**Workshop: Photography**

Experimentation with photography as a means of visual research and communication of the social and built aspects of the environment. Familiarity with the basic techniques of photography is required as a prerequisite. Students are required to prepare a photographic essay that explores some aspect of man's relationship with the built environment.

Prerequisite: Permission of the School.

Day division, Fall or Winter term: Six hours a week.

Architecture 79.391★ Elective Course

**Selected Topics: Studies in Architectural Techniques**

The course focuses on one specific aspect of architecture in the area of architectural techniques. Course offerings change from year to year.

Prerequisite: Permission of the School.

Day division, Fall or Winter term.

Architecture 79.392★ Elective Course

**Selected Topics: Workshop in Architectural Techniques**

Workshop focuses on one specific aspect of architecture in the area of architectural techniques. Workshop offerings change from year to year.

Prerequisite: Permission of the School.

Day division, Fall or Winter term.

Architecture 79.488★ Elective Course

**Independent Study**



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**Design Studios/Design Thesis/Research Thesis**


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**Architecture 80.111 Core Course****Design Studio 1A (1.5 credits)**

An introductory studio directed towards the development of basic design skills. Projects consist of abstract two-dimensional and three-dimensional exercises. Assignments include freehand, perspective and life drawing. There is an emphasis on craftsmanship.

Day division, Fall term: Scheduled studio time 12 hours a week.

**Architecture 80.112 Core Course****Design Studio 1B (1.5 credits)**

A continuation of Architecture 80.111. Ordering principles that form a basis for architecture are investigated at a very elemental level. Design projects are semi-abstract and highly constrained. The studio includes life drawing, photography and perspective assignments.

Day division, Winter term: Scheduled studio time 12 hours a week.

**Architecture 80.211 Core Course****Design Studio 2A (1.5 credits)**

The application of ordering principles in architecture is considered in response to site, climate, function and materials and methods of construction. Small-scale projects develop in complexity through both terms.

Prerequisites: Architecture 80.111 and 80.112.

Day division, Fall term: Scheduled studio time 12 hours a week.

**Architecture 80.212 Core Course****Design Studio 2B (1.5 credits)**

A continuation of Architecture 80.211. Small-scale projects develop in complexity during this term.

Prerequisites: Architecture 80.111 and 80.112 and have taken 80.211.

Day division, Winter term: Scheduled studio time 12 hours a week.

**Architecture 80.304 Core Course****Design Studio 3A (1.5 credits)**

The principles, vocabularies and craft of architecture are considered within the contexts of purpose, place and precedent. Projects address the subject of small-scale building in the natural and urban landscape.

Prerequisites: Architecture 80.211 and 80.212.

Day division, Fall term: Scheduled studio time 12 hours a week.

**Architecture 80.306 Core Course****Design Studio 3B (1.5 credits)**

The continuation of the theme of Architecture 80.304 with an increase in project scope and complexity.

Prerequisites: Architecture 80.211 and 80.212 and have taken 80.304.

Day division, Winter term: Scheduled studio time 12 hours a week.

**Architecture 80.391★ Elective Course****Selected Topics: Studies in Design**

The course focuses on one specific aspect of architecture in the area of design. Course offerings change from year to year.

Prerequisite: Permission of the School.

Day division, Fall or Winter term.

**Architecture 80.392★ Elective Course****Selected Topics: Workshop in Design**

Workshop focuses on one specific aspect of architecture in the area of design. Workshop offerings change from year to year.

Prerequisite: Permission of the School.

Day division, Fall or Winter term.

**Architecture 80.403 Core Course****Design Studio 4A (1.5 credits)**

The principles and vocabulary of construction and technique are considered as primary generators of architectural form. Projects are based on the design development of both small- and large-scale projects.

Prerequisites: Architecture 80.304 and 80.306.

Day division, Fall term: Scheduled studio time 12 hours a week.

See also Directed Studies Abroad (p. 305).

**Architecture 80.405 Core Course****Design Studio 4B (1.5 credits)**

The principles and vocabularies arising from the relationship between architecture and the urban context in which it is situated. Projects focus on part of the urban context.

Prerequisites: Architecture 80.304, 80.306 and have taken 80.403.

Day division, Winter term: Scheduled studio time 12 hours a week.

**Architecture 80.457 Core Course****Design Studio 5A (2.5 credits)**

Design projects are focused on faculty members' areas of special interest in architecture.

Prerequisite: Clear standing to Fifth year.

Day division, Fall term: Scheduled studio time 20 hours a week.

**Architecture 80.458 Core Course****Design Thesis 5B (2.5 credits)**

Student-initiated design project. Students propose a design idea or issue to be developed in depth. With the advice and approval of the studio faculty, the student defines and undertakes a suitable building project.

Prerequisite: Clear standing to Fifth year.

Day division, Winter term: Scheduled studio time 20 hours a week.

**Architecture 80.460 Core Course****Research Thesis 5.1 (2.5 credits)**

The project may be an investigation of a building, or research into a topic related to architecture. The work is developed under the direction of a tutor. The Thesis Committee, with the tutor, evaluates the finished project.

Prerequisite: Clear standing to Fifth year.

Day division, Fall term.

**Architecture 80.461 Core Course****Research Thesis 5.2 (2.5 credits)**

This project may be a continuation of the project undertaken in Architecture 80.460 if approved. Successful completion of Architecture 80.460 is prerequisite.

Prerequisite: Clear standing to Fifth year.

Day division, Winter term.

# School of Industrial Design

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## Officers of Instruction

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### *Director*

J. Giard

### *Professor*

W. Gilles

### *Visiting Professor*

B. Burns

### *Associate Professors*

J.R. Giard

S. Gibson

B. Wozniak

### *Assistant Professor*

M. de Leeuw

### *Adjunct Professors*

G. Davis

G.F. Singer

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## General Information

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Industrial design\* is a creative activity, the aim of which is to determine the formal qualities of objects produced by industry. These formal qualities include the external features, but are principally those structural and functional relationships that convert a system to a coherent unit, both from the point of view of the producer and of the user.

Industrial design tends to embrace all aspects of human environment that are conditioned by industrial production.

In the future, the traditional activity of design for growth may continue to be essential. It will be necessary, however, to develop a design activity that contributes to the regulating of growth processes, the conservation of resources and the protection of the environment.

\*As defined by the International Council of Societies of Industrial Design.

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## Bachelor of Industrial Design Degree Program

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In September 1973, Carleton University initiated the First year of a new four-year program leading to the Bachelor of Industrial Design degree.

The Bachelor of Industrial Design degree is awarded on successful completion of the four-year program of studies. The program is structured to meet the requirements of the developing profession of industrial design. This implies an education with a solid general background, enabling the designer to communicate with experts in other disciplines. It also implies development of expertise in designing for one or more specific sectors in the wide field of application of industrial design. The program of studies was initiated as a joint venture of the Faculty of Engineering and the School of Architecture.

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## Admission Requirements

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### **First Year**

The Ontario Secondary School Honour Graduation Diploma with a minimum 65% average and including functions, calculus, chemistry and physics; or the successful completion of the Qualifying-University year in Science or Engineering is a minimum requirement.

In order to compete successfully for admission in this limited enrolment program, it is strongly recommended that the candidate present a portfolio of any kind of work that could demonstrate the applicant's creativity and aptitude for the study of industrial design. Following the initial review of each submitted portfolio, candidates whose portfolios are considered acceptable may be contacted to arrange for a personal interview. Such an interview will give the School of Industrial Design a clearer idea of the seriousness of the candidate and afford the candidate an opportunity to see and learn actively about the program of the School of Industrial Design.

### **Advanced Standing and Transfer of Credits**

Applications for admission with advanced standing to the Second or subsequent years of the program leading to the Bachelor of Industrial Design degree will be evaluated on an individual basis. Advanced standing for academic subjects completed at another university or college will be evaluated for equivalence to the program requirements of the School of Industrial Design. Transfer of credit for projects in such programs as industrial design, engineering design, architecture, etc., completed at another university or college may also be considered, provided the grade is satisfactory and the student shows evidence of aptitude for design studio work by the production of a portfolio of original drawings or photographs, etc., and as a result of an interview with a designated member of the faculty of the School of Industrial Design.

Graduates from degree programs at Carleton University in Architecture, Engineering, Science and Commerce who meet the admission requirements for the First year of the B.I.D. degree program, could expect to be able to complete the work for the B.I.D. degree in two years if their first degree program includes, minimally:

- 85.100★ Introduction to Industrial Design
- 85.101★ Industrial Design Analysis
- 88.100 Engineering Graphics and Design or
- 85.120★ Product Drawing
- 43.100 Introduction to Economics
- 49.100 Introductory Psychology

### **Mature Matriculation**

Persons who lack the normal entrance requirements as published in this calendar but who have been away from full-time studies for a minimum of two years and who are 21 years of age or over by December 31 of the year in which they wish to enrol, may receive consideration for admission to a degree program.

### **Selective Admission**

It should be noted that the number of student spaces in the School of Industrial Design is limited. Because of this, it may not be possible to grant admission to all applicants who meet the foregoing requirements. Admission, therefore, will be on a selective basis with preference given to those candidates who show the highest promise of success in the course.



### Course Requirements

#### First Year

Term	Lectures and Tutorials		Laboratory and Studio Work	
	Fall	Winter	Fall	Winter
69.107★ Elementary Calculus I	4	—	—	—
69.117★ Elementary Algebra	—	4	—	—
43.100 Introduction to Economics	3	3	—	—
75.100 Introductory Physics	3	3	3	3
85.100★ Introduction to Industrial Design	3	—	3	—
85.101★ Industrial Design Analysis	—	3	—	3
85.120★ Product Drawing	—	2	—	6
95.103★ Introduction to Scientific Computing	3	—	—	—
82.111★ Engineering Analysis	—	3	—	3
Elective half-course credit ( <b>note a</b> )	3	—	—	—
Hours per week	19	18	6	15

#### Note a

The elective must be chosen in consultation with the School of Industrial Design.

#### Second Year

Term	Lectures and Tutorials		Laboratory and Studio Work	
	Fall	Winter	Fall	Winter
85.210 Mass-Production Technology for Industrial Design	2	2	4	4
85.220 Form and Colour Fundamentals	2	2	4	4
85.230★ Visual Communication Theory and Techniques for Industrial Design	1	—	5	—
85.231★ Introductory Industrial Design Projects	—	2	—	6
49.100 Introductory Psychology	3	3	—	—
Architecture, Engineering or Computer Science Electives ( <b>note a</b> )	3	3	3	3
Electives	3	3	—	—
Hours per week	14	15	16	17

#### Note a

Total course value equivalent minimally to 1.0 credit.

Third Year

Term	Lectures and Tutorials		Laboratory and Studio Work	
	Fall	Winter	Fall	Winter
42.224★ Basic Marketing	—	3	—	—
49.372★ Perception	3	—	—	—
85.330 Studio Projects Industrial Design I (note a)	4	—	12	—
85.331 Studio Projects Industrial Design II (note a)	—	4	—	12
85.350 Colloquium Cultural Subjects	3	3	—	—
85.360★ Anthropometrics and Ergonomics	2	—	3	—
85.361★ Anthropometrics and Ergonomics Workshop	—	2	—	3
Electives (note b)	2	2	4	4
Hours per week	14	14	19	19

Note a

The studio project courses, although given in one term each, are counted as full courses with one credit each.

Note b

It is recommended that students take Industrial Design elective courses or Engineering courses, but they must take one of the following: Industrial Design 85.321★, 85.322★, or 85.420★.

Fourth Year

Term	Lectures and Tutorials		Laboratory and Studio Work	
	Fall	Winter	Fall	Winter
85.400★ Professional Practice in Industrial Design	3	—	—	—
85.401★ Industrial Design Seminar (note a)	—	3	—	—
85.430 Major Industrial Design Projects (note b)	2	2	14	14
85.431 Minor Industrial Design Projects I	2	2	6	6
85.432 Minor Industrial Design Projects II	2	2	6	6
85.440★ Industrial Practice Internship Field Reports	—	—	—	—
Electives (note c)	3	3	—	—
Hours per week	12	12	26	26

Note a

The Industrial Design Seminar takes place in the Winter term, and therefore requires registration in that term. However, most of the preparatory work that students are required to do must be completed in the Fall term.

Note b

The Major Industrial Design Projects course has a value equivalent of 2.0 credits.

Note c

The electives must be chosen in consultation with the Industrial Design Projects Committee on the following principles:

- (i) The electives chosen should serve to deepen the student's understanding of fields related to Industrial Design or disciplines which are relevant for industrial designers;
- (ii) The electives chosen should preferably be advanced courses;
- (iii) The electives chosen should preferably be related to the Industrial Design projects and provide basic and/or actual information for these projects.



### Industrial Practice Internship

In order to provide the student with a realistic view of the possibilities and limitations of industry, and to establish and maintain good contacts and communication among the School of Industrial Design, the students and industry, the student in Industrial Design has to spend a period of time as an intern in industry.

These periods of industrial practice internship are to be taken prior to graduation and to be chosen in an industry that will satisfy the faculty member involved. Students should find a suitable internship on their own initiative. In cases where a suitable internship cannot be found, alternate arrangements will be considered.

If the industrial practice internship is not completed in time or if it is not proved successful, the student will not be awarded the Bachelor of Industrial Design degree until the missing internship is completed and proof of satisfactory results is given.

During the industrial practice internship, a study of the relationship between industrial design and the technology, production process, or functional issues at hand will be undertaken. A report is to be submitted to the School, to be filed in the technical data facilities of the School of Industrial Design and made accessible to other students.

See course Industrial Design 85.440★.

### Industrial Design Projects

The Industrial Design projects in the Second, Third and Fourth years will represent either real or simulated situations to be developed to the stage of drawings, models, full-scale mock-ups or simulated finished products, as appropriate.

The design experience in Industrial Design projects synthesizes and integrates all the other course work and draws on the resources from those courses, including the disciplinary expertise of the staff. It should also attempt to explore and exploit knowledge available on campus and within institutions outside.

Industrial Design projects, even when they are research-oriented, will only be acknowledged when they are aiming at predetermined goals, which should be of a concrete nature, preferably objects to be made by industry. The subject or theme of the project will be determined by agreement between the student and the faculty involved.

The usual pattern of activities in the execution of an Industrial Design Project is, in its simplest form, composed of three subsequent phases:

- (a) an analytical informative phase;
- (b) a creative or formative phase;
- (c) a descriptive or communicative phase.

Progress within this pattern of activities is made by feedback and feed-forward with intermediate evaluations. A project will not be considered complete if any of the three major phases has not been passed through, documented and evaluated.

The student will be required to keep a record of working hours spent on the project. This record must be available for inspection, and must be one of the documents submitted at examination.

The School of Industrial Design may conditionally approve an intended collaboration of students in the execution of Industrial Design projects provided that proper means of evaluation and examination are built

into the project to ensure the identification of each student's contribution.

Industrial design projects will be examined by the appropriate body after each of the phases and on the planned and agreed deadlines. Students who do not meet the deadlines for submission of project work will be considered to have withdrawn from examination.

It should be noted that supplemental examination privileges will not be granted for Second-, Third-, and Fourth-year Industrial Design project courses (85.231★, 85.330, 85.331, 85.430, 85.431, and 85.432). This regulation implies that students who obtained a grade of less than C- for such a course must repeat the course and attain a grade of C- or better in order to proceed in the program.

The execution of Industrial Design projects will require professional equipment for sketching, drawing, etc., which will not be provided by the School of Industrial Design. A list of recommended equipment is available at the administration office of the School of Industrial Design.

The execution of Industrial Design projects will require materials for sketching, drawing, reproduction, model-making, etc. Moreover, travel costs may be involved. The level of total expenditure will vary considerably with the nature of the theme or subject of the project. The policy of the School of Industrial Design is to see that such costs are only partly borne by the student and that co-operation with industry and institutions outside the University will provide further funds.

Documents, sketches, drawings, models, etc. resulting from Industrial Design projects must be registered with the administration of the School of Industrial Design as the authorized work of the student while studying at the School of Industrial Design of Carleton University.

Resulting documents, sketches, drawings, models, etc. from Industrial Design projects must be retained by the student for a minimum period of two years after production. During this period the student must have these results available in good condition for the School of Industrial Design for exhibition, display or publication purposes. During this time, the student will be required to advise the Director of the School, well in advance, about any transaction, exhibition, display or publication, that will involve these results.

Students are not allowed to use the results of Industrial Design projects for commercial purposes without written permission of the Director of the School of Industrial Design.

### Fourth-Year Industrial Design Projects

All regulations and arrangements as described under "Industrial Design Projects" apply to the Fourth-year projects. Over and above these regulations, Fourth-year Industrial Design projects are subject to the following:

All Fourth-year students are required to undertake Industrial Design 85.430, Major Industrial Design Projects, 85.431, Minor Industrial Design Projects I, and 85.432, Minor Industrial Design Projects II in the same academic year.

Fourth-year Industrial Design projects are conducted, supervised, administered and examined by the Industrial Design Projects Committee, reporting to the Faculty Board of the School of Industrial Design.

The subjects or themes of Industrial Design Projects are determined by agreement between the student and the Industrial Design Projects Committee. This agreement

should be reached before the end of Winter term in the Third year.

A student who chooses to do an Industrial Design project that is based on special techniques or technologies, is required to propose an expert in that special field to be present at the evaluations of the project to assist the Industrial Design Projects Committee.

Students registering in Fourth year, who have failed to reach an agreement with the Industrial Design Projects Committee before the end of the Third year, are given assignments for Fourth-year projects by the Committee after registration. Such assignments are binding.

In order to reflect the actual situation of the professional industrial designer, the student is required to undertake more than one project to be executed simultaneously in Fourth year. The student is required to plan the work on the Fourth-year Industrial Design projects well in advance, in consultation with the Industrial Design Projects Committee.

The proposal for a work plan must be submitted to the Industrial Design Projects Committee for approval before the end of the Winter term of Third year.

The specified record of working hours spent on Fourth-year Industrial Design projects must be available for inspection by the Committee at any time and be among the documents to be submitted at the final examination.

General Information

Course Pattern

The program of study in Industrial Design is necessarily structured to meet the requirements in education and training for a professional career in industrial design.

For purposes of scheduling, each student is considered as being in a particular year of the program. In order to move through the program, a student must not be deficient in the Industrial Design project course(s) and in no more than one of the other courses. This requirement does not relate to a student's academic status, but only to the nominal year designation. However, a student who is taking courses in Fourth year while designated as being in Third year, has the responsibility for satisfactorily resolving any prerequisite deficiencies and difficulties in the course program.

Course Level

The year level of a course can be read from the first digit to the right of the decimal in the course number; for example, the course Industrial Design 85.331 is at Third-year level and 85.430 is at Fourth-year level. This indicates the general academic background required. Specific prerequisites are also given where appropriate. Students may take courses at a year level higher than their current registration; they are advised, however, to consult the course instructor if they have doubts regarding their background preparation. In some cases, the School of Industrial Design may also be able to waive specific prerequisites.

Electives

The School of Industrial Design offers elective courses under its own jurisdiction. It is strongly recommended, however, that students in Industrial Design also choose from the wide variety of courses in the humanities, social sciences, engineering or multi-disciplinary courses

offered in the University. Industrial Design projects usually represent complex situations which require background information that often will be better understood when supported by appropriate elective courses in other disciplines.

Qualifying-University-Year Courses

Qualifying-University-year courses cannot be used to satisfy any of the elective requirements in any year of the regular course pattern.

Timetables

All undergraduate courses of the School of Industrial Design are normally offered in the Day division only and are scheduled in the timetable of the University.

Carleton Industrial Design Students' Association

CIDSA organizes social and academic events to develop esprit de corps among Industrial Design students and faculty. The association also represents students within the School of Industrial Design regarding academic and/or policy matters to the University and the profession.

Grading System

Standing in courses will be determined by the School and will be shown by alphabetical grades. The grades used with their corresponding grade points are as follows:

A+	12	B+	9
A	11	B	8
A-	10	B-	7
C+	6	D+	3
C	5	D	2
C-	4	D-	1

Passed Supplemental Examination: D-

Notations to represent special circumstances are as follows:

Aeg

Aegrotat standing is a pass standing granted despite absence from the final examinations. It may be granted by the Committee on Student Standing and Promotion of the School of Industrial Design only in response to a student's written request. Aegrotat standing will be granted only in exceptional circumstances and if the term work has been of high quality.

F

Failure: no academic credit.

FNS

Failure, but with supplemental privileges withdrawn because of unsatisfactory term work or an unacceptably low mark in the examination. No academic credit.

Wdn

Withdrawn in good standing: no academic credit.

Abs

Absent from formally scheduled final examinations where the necessary term work has been completed. No supplemental privileges. No academic credit.



**Def**

Students who are absent from final examinations or who are unable to complete their course work for medical or compassionate reasons may apply to the Committee on Student Standing and Promotion of the School of Industrial Design for deferred examination privileges. Such applications must:

1. be made in writing to the Engineering Faculty Registrar's Office not later than one week after the date of the examination; and
2. be fully supported in the case of illness by a medical certificate or by appropriate documents in other cases.

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**Academic Standing, Promotion and Probation**


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The academic standing of each student in the B.I.D. program will be reviewed prior to fall registration. At that time, the student's previous record, including courses from the preceding Summer session and supplemental examination results, will be considered.

Grade-point averages and cumulative grade-point averages determine the academic standing of a student. They are calculated on the basis of course credits. Normally, a full (two-term) course has a value of 1.0 credit and a half-course (one term), indicated by a ★ after the course number, has a value of 0.5 credit. In the B.I.D. program, the courses Industrial Design 85.330 and 85.331, although offered in one term, have a course value equivalent to 1.0 credit each. The course Industrial Design 85.430 has a course value equivalent to 2.0 credits.

A student who, upon review, no longer meets these requirements for satisfactory academic standing, will be placed on academic probation. A student may be on academic probation only once in the Bachelor of Industrial Design program.

A student on probation will be required to repeat the following courses from the previous year of registration:

1. any Industrial Design project course of the core program for which a grade less than C- was obtained;
2. any other core course that was failed.

Moreover, the student will be required to repeat or to replace any elective course of the previous year's registration that was failed.

A student on probation who fails to meet these conditions will lose undergraduate status and will be ineligible for future registration in the B.I.D. program.

To achieve satisfactory academic standing, the student must:

1. meet the grade-point average required for the year of study just completed;
2. meet the cumulative grade-point average required for all courses taken as part of the Bachelor of Industrial Design program.

The required cumulative grade-point average and the grade-point average for the year are:

- 2.5 after one year of study;
- 2.8 after two years of study;
- 3.1 after three years of study;
- 3.4 after four years of study.

A year of study, as used here, refers to the student's period of study and not to the program year defined in the

previous section of these regulations. Calculation of the average is based on all the courses in which the student was registered during the year being completed, plus the courses of previous years. The most recent grade obtained in each course will be used to compute the grade-point average.

3. not receive a grade of F, FNS or Abs in the year of study just completed in more courses than the allowable numbers listed below:

Number of Full Course Equivalents Taken	Maximum Number of Full Course Equivalent F, FNS or Abs Allowed
0.5 — 1.0	0
1.5 — 2.5	0.5
3.0 — 4.0	1.0
4.5 — 5.5	1.5
6.0 or more	2.0

4. achieve a grade point of 4.0 (C-) or better in each of the Industrial Design project courses.

**Students with Advanced Standing**

Students admitted with advanced standing must obtain an average appropriate to their level of admission but only those courses taken at Carleton University will be included in the evaluation.

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**Graduation**


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In order to fulfil the minimum graduation requirements for the degree of Bachelor of Industrial Design, a candidate must have met all the course requirements of the First to Fourth years, inclusive, with a cumulative grade-point average of at least 3.4. In addition, the candidate must have achieved a grade point of 4.0 or better in each of the Industrial Design project courses and be recommended by the School of Industrial Design.

In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) in addition to all School regulations.

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**Degrees with Distinction**


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Upon recommendation of the School of Industrial Design, the notation "with High Distinction" may be made on the academic records of a candidate for the degree of Bachelor of Industrial Design. To be considered for this recommendation, the candidate is expected to obtain a grade-point average of at least 9.0 in the course requirements of the final year and, in addition, a grade-point average of at least 7.8 in the course requirements of the First to Fourth years, inclusive.

Upon recommendation of the School of Industrial Design, the notation "with Distinction" may be made on the academic records of a candidate for the degree of Bachelor of Industrial Design. To be considered for this recommendation, the candidate is expected to obtain a grade-point average of at least 7.8 in the course requirements of the final year and, in addition, a grade-point average of at least 6.6 in the course requirements of the First to Fourth years, inclusive.

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**Courses Offered**

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**Industrial Design 85.100★**

**Introduction to Industrial Design**

An overview of the theoretical background of the phenomenon industrial design, consisting of such topics as: the definitions and dimensions of design and industrial design, its nature and its historical evolution; the notion of quality; quality aspects in man-made objects; formal qualities as determinants for categories of design; design methods; design management in industry; professional practice of industrial design and industrial design promotion, nationally and internationally. Practising industrial designers are invited to present case studies of their activities. (Also listed as Architecture 76.206★.)

Day division, Fall term: Lectures and discussions three hours a week, laboratory three hours a week.

**Industrial Design 85.101★**

**Industrial Design Analysis**

The various problems involved in industrial design are analyzed. Among others: the relationship with principal techniques and mass-production technology; problems of uniformity and variety, specialty and versatility in production; problems of tolerances; the role of ergonomics and anthropometrics in design; industrial design and environment; speculations about future industrial design approaches with regard to pollution and conservation of resources; adaptation of value-analyses to the field of industrial design. (Also listed as Architecture 76.211★.)

Prerequisite: Industrial Design 85.100★ (Architecture 76.206★).

Day division, Winter term: Lectures and discussions three hours a week, laboratory three hours a week.

**Industrial Design 85.120★**

**Product Drawing**

In this course, the principles of orthographic projection drawing with auxiliary views and sections are taught and practised. Exercises consist of measuring existing products, sketching them and producing mechanical product drawings from the sketches. Attention is paid to problems of dimensioning, fits and tolerances.

Evening division, Winter term: Lectures and tutorials two hours a week, laboratory six hours a week.

**Industrial Design 85.210**

**Mass-Production Technology for Industrial Design**

This course attempts to generalize the transformation techniques for all operational materials in modern industry. The course presents a survey of the various techniques applied to material in its liquified, plastified or solid state of aggregation, such as casting, injection molding, extruding, forging, vacuum forming, deep-drawing, stamping, folding, cutting, machining, sintering, joining, laminating and finishing operations. The techniques are merited in terms of economics and accuracy. The role of templates and molds is emphasized and properties and limitations of molds are studied.

Day division: Lectures and tutorials two hours a week, laboratory four hours a week.

**Industrial Design 85.220**

**Form and Colour Fundamentals**

The objective of the course is to encourage the student to approach the phenomena of form and colour systematically. Known systems of form determination and colour identification are evaluated. Properties of structural elements of form and their interactions in ranges, proportions, static and dynamic symmetries in two- and

three-dimensional compositions are studied. Form and colour in nature are compared with form and colour in man-made environments. Further topics of the course are the appearance of form and colour under various conditions and in various positions, the expression of form and colour, typology of objects, form organization and form description and colour specification.

Day division: Lectures and tutorials two hours a week, laboratory four hours a week.

**Industrial Design 85.230★**

**Visual Communication Theory and Techniques for Industrial Design**

An introduction to the theory and basic techniques of drawing and sketching as an aid to design. Introductory material is also presented in basic sketching, ideation and visualization, together with presentation techniques.

Day division, Fall term: Lectures and tutorials one hour a week, laboratory five hours a week.

**Industrial Design 85.231★**

**Introductory Industrial Design Projects**

The introductory industrial design projects deal with product development theories in connection with case studies. The laboratory work of this course gives the student an opportunity to apply the experience of Industrial Design 85.230★ in a real product design situation, where an existing product is analyzed and proposals for improvement and innovation are produced. The emphasis is on the application of visual communication techniques in design.

Prerequisite: Industrial Design 85.230★.

Day division, Winter term: Lectures and tutorials two hours a week, laboratory six hours a week.

**Industrial Design 85.312★**

**Graphics Technology and Design**

Survey of techniques and processes used in the printing and blockmaking industry and the relationship of these processes to graphic design. Typeface design and the development of type and families of typeface from historical sources. Typefaces as exponents of cultural trends. Basics underlying typography and layout in graphic design. Minor graphic design projects are executed in connection with the lectures.

Evening division, Fall term: Lectures and tutorials three hours a week, laboratory three hours a week.

**Industrial Design 85.313★**

**Package Engineering and Design**

Survey of processes and materials used in the packaging industry. Principles of package engineering and design for the transportation and distribution of mass-produced products. Packaging design as integrated in marketing processes; product and brand identification; corporate identity through package design. Minor packaging design projects are executed in connection with the lectures.

Prerequisites: Third-year registration and Industrial Design 85.312★.

Day division, Winter term: Lectures and tutorials three hours a week, laboratory three hours a week.

**Industrial Design 85.321★**

**Environmental Communication Workshop**

It is recognized that the objects of our environment, besides serving their primary usage, are most often used as a medium to communicate man's personal or collective ideas. The design of objects and environments can, to a great extent, be seen in this context and this course is intended to explain the major mechanics of communication in general and of communication by



means of objects in particular. Analyses of objects and environments with respect to communicative functions are undertaken and experiments are conducted.

Prerequisite: Third-year registration.

Day division, Fall or Winter term: Lectures two hours a week, laboratory four hours a week.

#### Industrial Design 85.322★

##### **Advanced Studies in Form and Colour**

Students may continue the research and study encountered in Industrial Design 85.220 by doing advanced research in some specific area of the phenomena of form and/or colour. Directed study.

Prerequisite: Industrial Design 85.220 or permission of the School of Industrial Design.

Day division, Fall or Winter term: Lectures one hour a week, laboratory five hours a week.

#### Industrial Design 85.330

##### **Studio Projects Industrial Design I**

The industrial design projects to be accomplished are of a simple nature, based on a given briefing and program of requirements. The emphasis is on the creative and executive phases of the design process.

Prerequisites: Industrial Design 85.230★ and 85.231★ or permission of the School of Industrial Design.

Day division, Fall term: Lectures and tutorials four hours a week, laboratory 12 hours a week.

Course value equivalent to 1.0 credit.

#### Industrial Design 85.331

##### **Studio Projects Industrial Design II**

Industrial design projects II are of a more complex nature and may be accomplished with experts from other disciplines. These projects begin with an extensive period of orientation on the given problem areas from which the program of requirements is derived, which present the criteria for further creative and executive work. The choice of design assignments is made with the consent of the students involved. It is considered to be important that the student is doing a complete job, including the accomplishment of all the sketchwork, the making of preliminary models, product drawings and modelling.

Prerequisite: Industrial Design 85.330.

Day division, Winter term: Lectures and tutorials four hours a week, laboratory 12 hours a week.

Course value equivalent to 1.0 credit.

#### Industrial Design 85.335★ and 85.336★

##### **Third-Year Special Industrial Design Studies**

Special Industrial Design Studies deal with specific projects, which may differ from year to year depending on the availability of specialists in a particular field or study opportunities as they present themselves.

Prerequisite: Third- or Fourth-year registration, or permission of the School of Industrial Design.

Evening division, Fall and Winter terms: Lectures, tutorials and laboratory six hours a week.

#### Industrial Design 85.350

##### **Colloquium Cultural Subjects**

This colloquium is seen as an opportunity to introduce various cultural subjects by experts from these fields. The perspective of the colloquium is anthropological and the objective is to give the students a sense of context and relevance of industrial design as an integral part of our culture.

Prerequisite: Industrial Design 85.100★ (Architecture 76.206★).

#### Industrial Design 85.360★

##### **Anthropometrics and Ergonomics**

Concepts of human engineering, anthropometrics and ergonomics are studied, researched and experimentally applied. Special emphasis is given to limits of human performance, visual and tactile displays, man-machine and man-environment interface, measurement, etc.

Day division, Fall term: Lectures and discussion two hours a week, laboratory three hours a week.

#### Industrial Design 85.361★

##### **Anthropometrics and Ergonomics Workshop**

Laboratory work and experimentation in anthropometric and ergonomic factors as they affect industrial design.

Prerequisite: Industrial Design 85.360★.

Day division, Winter term: Lectures and discussion two hours a week, laboratory three hours a week.

#### Industrial Design 85.400★

##### **Professional Practice in Industrial Design**

The course surveys how industrial designers practise as independent consultants, and how they are employed in industry. The organizational aspects of independent offices of industrial design, their responsibilities towards their clients and their ways of operation are compared with the role of industrial design and the organizational aspects of the profession within the framework of industrial management. Topics include the form of contracts for industrial design consultancy, ways of determination of fees, legal implications of the profession including those of patents and copyrights. The course also deals with the organization of the profession on a national and an international basis. Representative industrial designers are invited to give their views on professionalism and to present case histories of their operations.

Prerequisite: Industrial Design 85.100★ (Architecture 76.206★).

Day division, Fall term: Lectures and discussion three hours a week.

#### Industrial Design 85.401★

##### **Industrial Design Seminar**

Each year a special topic is chosen to be elaborated on and discussed. The topics deal with problems in the relationship of industrial design to other disciplines or problems regarding the theoretical aspects of industrial design itself. At the seminar, students are required to present the results of preliminary studies on the chosen topic to a forum of invited representatives of various disciplines and the profession of industrial design.

Prerequisite: Registration in Fourth-year Industrial Design projects.

#### Industrial Design 85.411★

##### **Advanced Studies in Manufacturing Technology for Industrial Design**

Directed study in the field of manufacturing, centred on such topics as: cost analysis, new materials and processes, computer aided manufacturing, numerically controlled machining, machining of molds, etc.

Prerequisite: Industrial Design 85.210 or equivalent.

#### Industrial Design 85.420★

##### **Form Organization**

Form organization attempts to design, define and prescribe solids of monolithic nature by means of an abstract system which can be used for instructional purposes to make and verify materialized approximations

of such solids. A three-dimensional locus is an example of such a system; other systems are based on controlled growth patterns, geometric generation, typological generation, etc. The course intends to describe variations of such systems, which the students are required to apply in laboratory exercises.

Prerequisite: Engineering 88.100 or Industrial Design 85.120★ or permission of the School of Industrial Design. Day division, Fall or Winter term: Lectures, tutorials and laboratory six hours a week.

Industrial Design 85.430 (2 credits)

**Major Industrial Design Projects**

The major Fourth-year industrial design projects should represent a theme from which one or more problem areas can be derived or narrowed down. The problem areas chosen should preferably be product-oriented and be of sufficient complexity. Preferably, the assignment should be undertaken in co-operation with off-campus organizations, industry, etc., to increase the realism of the approach, at the same time introducing the student to practice and placement. Depending on the nature of the assignment, the results of the design work in these major projects may deviate from the usual accomplishments of the executive phase of the process, but they should bear evidence of the student's involvement and thorough approach. See also: Industrial Design Projects, and Fourth-year Industrial Design Projects (p. 317).

Prerequisite: Industrial Design 85.331 or permission of the School of Industrial Design.

Day division: Lectures and tutorials two hours a week, laboratory 14 hours a week.

Course value equivalent to 2.0 credits.

Industrial Design 85.431

**Minor Industrial Design Projects I**

The minor industrial design projects mainly serve to enable students to demonstrate their versatility. The choice of the minor projects, therefore, must be in balance with the major projects. Although preferred, it is not strictly required that the minor projects be product-design oriented, nor need they be derived from actual utilization-problem areas. They could represent research in complementary design fields such as communication, graphic design or design experiments. Although the minor design projects may be of a less complex nature than the major projects, they should always conform to academic standards of quality and be handled in the same systematic way and with the same thoroughness as the major projects. See also: Industrial Design Projects, Fourth-year Industrial Design Projects (p. 317).

Prerequisite: Industrial Design 85.331 or permission of the School of Industrial Design.

Day division: Lectures and tutorials two hours a week, laboratory six hours a week.

Industrial Design 85.432

**Minor Industrial Design Projects II**

See Industrial Design 85.431.

Prerequisite: Industrial Design 85.331 or permission of the School of Industrial Design.

Day division: Lectures and tutorials two hours a week, laboratory six hours a week.

Industrial Design 85.435★ and 85.436★

**Fourth-Year Special Industrial Design Studies**

Like the Third-year Special Industrial Design Studies, those of Fourth year deal with specific projects, which may differ each year depending on the availability of specialists among the faculty of the School of Industrial

Design or on particular opportunities as they present themselves.

Prerequisite: Fourth-year registration or permission of the School of Industrial Design.

Day division, Fall and Winter terms: Lectures, tutorials and laboratory six hours a week.

Industrial Design 85.440★

**Industrial Practice Internship Field Reports**

During the periods of internship in industry, or in alternative internships approved by the School of Industrial Design, the student is required to study technological phenomena in their relationship to industrial design. At the end of each period, a field report, describing such phenomena and relationships, must be submitted to the School of Industrial Design for evaluation and marking. The quality and quantity of the field reports must minimally reflect a period of internship study of 16 weeks. Copies of field reports will be filed in the School of Industrial Design to be accessible to other students.



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## Humanities

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### Humanities 10.100

An examination of selected works, from Biblical times to the present, illustrating the various dominant views on the nature of humanity and attempts to understand people and their environment.

Prerequisite: First-year standing or higher.

Not offered 1986-87.

### Humanities 10.200★

An examination of selected works illustrating various dominant views on the nature of humanity and attempts to understand the world in the context of the twentieth century as seen from points of view of history, philosophy, social science and literature.

Prerequisite: Second-year standing or higher.

Not offered 1986-87.

Offered Summer 1986.

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## Arts and Social Sciences

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### Arts and Social Sciences 04.288

#### **Introduction to Women's Studies**

A survey course, designed to increase the student's understanding of the position of women in contemporary society. The course offers an introduction to such issues as biological and cultural sex differentiation, women and literature, women and religious institutions, women and politics, women and social and health services and women and the law. A brief introduction to the intellectual and social origins of feminism and a survey of women's place in Western European history provides a context for examining women's position in contemporary society. Evening division: Lectures and discussion three hours a week.

### Arts and Social Sciences 04.390

#### **The Literature of Existentialism**

A study of the origins, development, and principal characteristics of existentialist literature. (Also listed as English 18.390.)

All assigned readings will be in English.

Prerequisite: Permission of the Department of English.

Day division: Lectures two hours a week.

B.W. Jones

### Arts and Social Sciences 04.395

#### **Visual and Performing Arts in the Twentieth Century**

This interdisciplinary course is designed to examine selected aspects of the creation, distribution and reception of the arts in this century. The focus of the course is on the interplay of aesthetics, ideology and technology in music, theatre, film, art and architecture.

Prerequisite: Third-year standing and permission of the Fine Arts Committee (see p. 396).

### Arts and Social Sciences 04.491★

#### **Selected Topics in Women's Studies I**

Selected problems in the field of women's studies, not ordinarily treated in other course programs.

Prerequisite: Permission of the Interfaculty Committee on Women's Studies.

Seminar three hours a week.

### Arts and Social Sciences 04.492★

#### **Selected Topics in Women's Studies II**

Selected problems in the field of women's studies, not

ordinarily treated in other course programs.

Prerequisite: Permission of the Interfaculty Committee on Women's Studies.

Seminar three hours a week.

### Arts and Social Sciences 04.498

#### **Honours Essay**

A required interdisciplinary research essay for Honours students in the Fourth year of Directed Interdisciplinary Studies. The project is carried out by the student in consultation with a faculty supervisor. The project must be approved in advance by the Committee on Directed Interdisciplinary Studies; students must consult with the Program Co-ordinator in selecting a project and a supervisor. At least one week before the last day for course changes, students must submit to the Program Co-ordinator a written outline of the proposed study, approved by the supervisor. Arts and Social Sciences regulations governing Honours Theses and Research Essays apply to this project, which is equivalent to one credit.

Registration in this course is limited to students in the Fourth year of the B.A. (D.I.S.) Honours program.

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## Science

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### Science 60.100

#### **Man in His Environment**

This course is designed to acquaint students in Arts, Social Sciences and Engineering, with the methodology of science in approaching a problem. The historical aspects of scientific discoveries are examined, particularly those that influence present society. A special emphasis is directed to the interactions of science and society and to man's influence and impact on the natural environment.

Not offered 1986-87.

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## Technology, Society, Environment Studies

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Our society increasingly faces problems requiring communication among specialists of different disciplines. This is at least in part a result of increasing specialization of people and jobs. The multidisciplinary problems raised by the interaction of an industrial society with its environment, its resource base, and its complex technical systems are addressed by five courses organized by the Technology, Society, Environment Committee. These courses develop the multidisciplinary perspective through problem units on topics including energy, the industrial revolution, pollution, transportation, political regulation of technology, forecasting of technological and social change, technological innovation and the arms race. Each course involves team projects that bring together students working in different disciplines. The five courses are Technology, Society, Environment 59.300, 59.401★, 59.402★, 59.403★ and 59.404★. They are described on pp. 403-404.

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**Other Courses**

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African Studies, see p. 394.

Asian Studies, see p. 395.

Fine Arts, see p. 396.

Integrated Science Studies, see p. 397.

Labour Studies, see p. 400.

Medieval Studies, see p. 402.

Urban Studies, see p. 405.

Women's Studies, see p. 406.

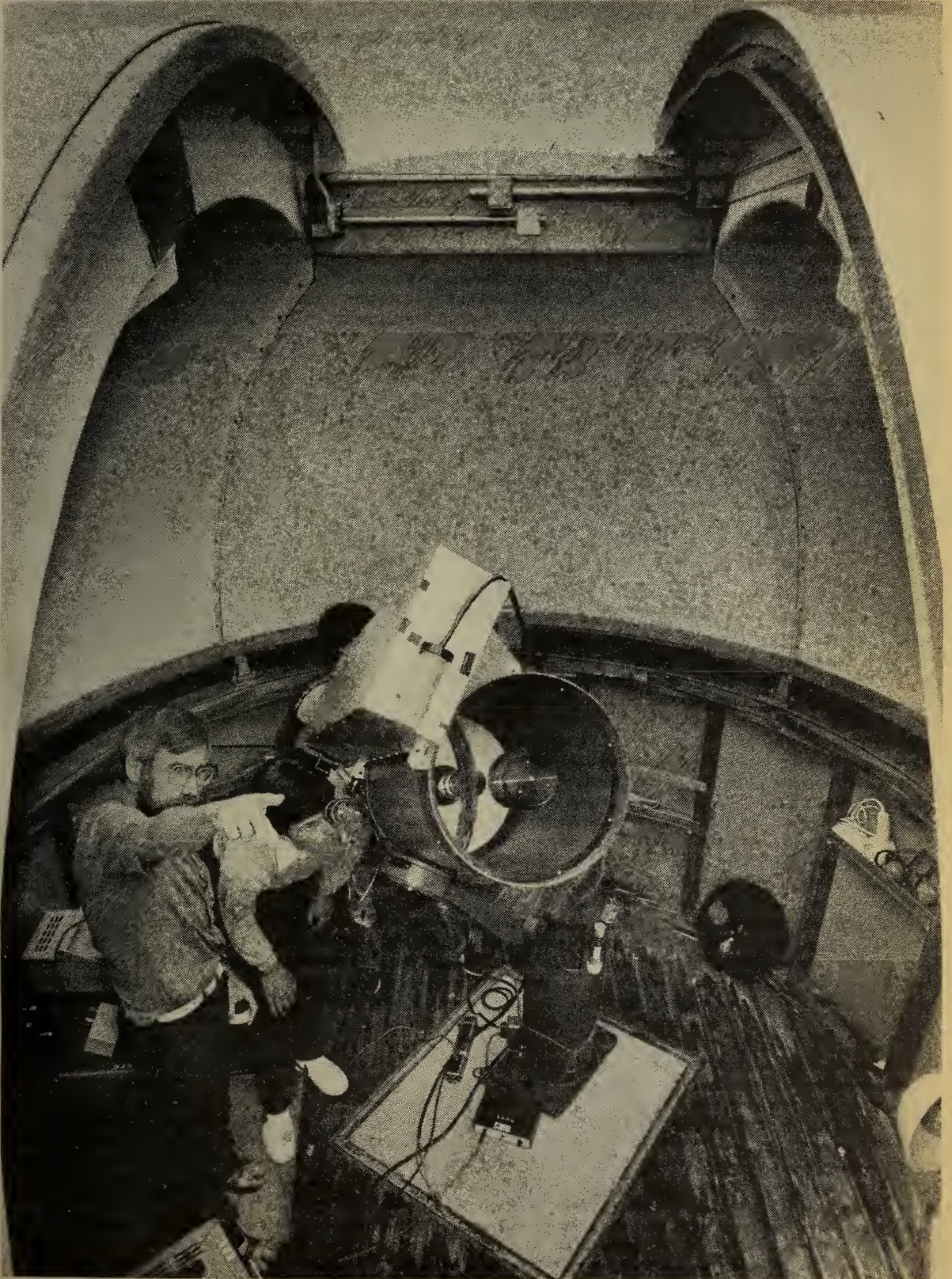
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**Directed Interdisciplinary Studies, B.A.**

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For information about the B.A. Directed Interdisciplinary Studies program see p. 122.











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## Officers of the Faculty

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*Dean*  
J.M. Neelin

*Associate Dean*  
To be announced

*Secretary of the Faculty*  
To be announced

*Registrar*  
B.R. Lifeso

Geology and Physics  
J. Blenkinsop, Chairman

Geology and Statistics  
Chairman: To be announced

Mathematics and Physics  
J.E. Hardy, Chairman

Committee on Admission and Studies  
Chairman: To be announced

Science Technology Centre  
A.A. Raffler, Director

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## Directory of Offices, Chairmen and Directors

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Office of the Dean  
223 Herzberg Physics, 564-3630

Office of the Associate Dean  
217 Herzberg Physics, 564-6623

Office of the Registrar  
212 Herzberg Physics, 564-6705

Biology, D.R. Gardner, Chairman  
583 Tory Building, 564-3871

Chemistry, D.R. Wiles, Chairman  
203 Steacie Chemistry, 564-2760

Geography, M.W. Smith, Adviser  
B349 Loeb Building, 564-2641

Geology, R.L. Brown, Chairman  
320 Tory Building, 564-2630

Mathematics and Statistics, B.M. Puttaswamaiah,  
Chairman  
712 Arts Tower, 564-5500

Physics, L. Copley, Chairman  
316 Herzberg Physics, 564-6630

Psychology, J.B. Kelly, Adviser  
B552 Loeb Building, 564-3636

Institute of Biochemistry  
564-2858

Integrated Science Studies Committee  
G.R. Carmody, Chairman

Committee on Combined Programs with Computer  
Science  
I. Reichstein, Chairman

Biotechnology Co-ordinator  
V.N. Iyer

Biology and Geology  
H.F. Howden, Chairman

Biology and Physical Geography  
J.P. Johnson, Chairman

Chemistry and Geology  
C.L. Chakrabarti, Chairman

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## General Information

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The Faculty of Science includes the Departments of Biology, Chemistry, Geology, Mathematics and Statistics, and Physics and provides programs leading to the degrees of Bachelor of Science, Bachelor of Science in Integrated Science Studies and Bachelor of Science with Honours.

The Science degree program is designed to provide specialization in one field of study called the Major field while permitting the candidate to select other courses from complementary fields or disciplines in which he or she has a particular interest. The Major fields include Biology, Chemistry, Computer Mathematics, Geology, Integrated Science Studies, Mathematics and Physics, and the corresponding programs are detailed in the departmental sections of the calendar.

For information about the Integrated Science Studies degree program see p. 360.

The Science degree program with Honours is designed for those students who wish to deepen and extend their studies in one particular field or area for the purpose of preparing themselves for graduate studies, or for entrance to the Specialist's Certificate of the Ontario College of Education or other fields of scientific endeavour. Honours may be taken in Biochemistry, Biology, Chemistry, Computer Mathematics, Geology, Integrated Science Studies, Mathematics, Operations Research, Physical Geography, Physics, Psychology and Statistics. Combined Honours may be taken in Biochemistry and Biotechnology, Biology and Biotechnology, Biology and Geology, Biology and Physical Geography, Chemistry and Geology, Computer Science and Mathematics, Geology and Physics, Geology and Statistics, Mathematics and Physics, and in Physics and Computer Science. The detailed programs are given in the appropriate departmental sections of the calendar. The Honours program of each student is under the direct supervision of an Honours adviser of the student's department.

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## Accelerated Progress

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Students registered in Qualifying University year who successfully complete two years or ten credits at the University with a B- or 70% average may have their programs assessed for the purpose of reducing the number of credits required to graduate. This reduction may be made for any student registered in the Faculty of Science who satisfies the promotion requirements for First-year Science within one academic year after admission to Qualifying-University-year Science with a grade-

point average of not less than 7.0 (B-) over credits taken and with the recommendation of a Major department or interdepartmental program committee.

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## Admission Requirements

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### Qualifying-University Year in Science

The Ontario Secondary School Graduation Diploma. A 70% average must be presented on a minimum of 10 advanced or enriched phase credits at Levels 3 and 4, including an appropriate preparation in chemistry, physics and level 4 mathematics.

### Bachelor of Science, Major Program

#### *First Year*

1. The successful completion of five credits approved for a Qualifying-University-year Science program with an average of C- or better in the credits in Mathematics and at least two Experimental Sciences; or
2. The Ontario Secondary School Honour Graduation Diploma with a minimum 60% average and including functions, calculus and two experimental sciences. Prospective students should note that, while only a 60% general average is required for admission, they should have at least 60% in the mathematics and science subjects offered. Applicants from outside the province of Ontario must present acceptable equivalent certificates generally required for admission to universities in their own provinces or countries. Applicants should note that in view of limited human and physical resources, meeting the minimum published admission requirements can only establish eligibility for selection to the Faculty of Science.

#### *Advanced Standing*

1. To be admitted to Second year a student must have completed the equivalent of the First-year Science program with the required academic standing.
2. Applications for admission to the Third or subsequent years will be evaluated on their merits, and advanced standing granted for studies undertaken elsewhere when these are recognized as the equivalent of subjects offered at Carleton University. Some work taken in the Faculty of Engineering may be counted toward a degree in Science should the student wish to transfer from the Faculty of Engineering at the end of the First or Second year.
3. Students not admitted to a degree program but taking courses at Carleton University as Special students may, on transfer to a Science degree program, receive credit for not more than seven credits, four of which must meet the First-year promotion requirements.

### Bachelor of Science Honours Program

1. (a) A new student desiring admission to Honours in Science should so indicate on the application for admission to undergraduate studies. The student may indicate the Honours program desired, in which case the application will be forwarded by the Admissions Office to the appropriate department or committee for approval. A student who does not wish to indicate the particular program may be admitted to First-year Honours Science. Any such student must elect a particular Honours program before entering Second year.
- (b) An "in course" student wishing to enter an Honours

program must apply to the chairman of the appropriate department or committee through the Science Faculty Registrar's Office.

2. For entry to the First year of an Honours program, a student must have an average of 65% or better in the subjects of Grade 13, as listed under the admission requirements for the Major program, or have a grade-point average of 4.0 or better in the courses of Qualifying-University year and the recommendation of the Honours department or committee. Students presenting credits for one or more repeated subjects or courses may not be admitted directly into an Honours program except on the recommendation of the department or committee concerned. Applicants should note that, in view of limited human and physical resources, meeting the minimum published admission requirements can only establish eligibility for selection to the Faculty of Science.

3. For entry to an Honours program after the completion of First year, a student must have a grade-point average of 6.0 or better in the Honours subject(s), an overall grade-point average of 4.0 or better and the recommendation of the Honours department or committee.

4. Students applying for admission to Honours in Science at Carleton after having obtained a degree from Carleton or another university shall meet the same criteria as specified in 2 and 3.

5. No student may be admitted to Honours in Science without satisfying the requirements for entry to the corresponding Major program.

6. While the consent of the department or committee concerned is necessary for entry to an Honours program, the department cannot establish a standard of entrance based on a grade-point average which is higher than that established by the faculty as set out in the foregoing paragraphs. Students who consider that they meet the requirements for entry to an Honours program but who have not been accepted by any department may appeal to the Science Committee on Admission and Studies for review of the case. The Committee will report to the Science Faculty Board on all such appeals. It should be noted, however, that departmental capacities to accept all qualified Honours candidates may be limited by physical resources.

7. Students in the final year of a Major degree program wishing to be considered for entry to an Honours program must apply to the Science Faculty Registrar's Office to have their names withdrawn from the graduation list before March 1 of that year. If subsequently the student is not accepted for an Honours program, the student must reapply for graduation.

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## Course Requirements

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### Qualifying-University Year in Science

A Qualifying-University year is offered which is the equivalent of Ontario Grade 13 (Senior Matriculation). The program consists of the following five credits:

1. Mathematics 69.006★ and 69.007★;
2. Two credits selected from Chemistry 65.010, Physics 75.010, Biology 61.101, Geology 67.100;
3. Two other credits selected from any of the foregoing subjects not already presented and from other courses approved for a Qualifying-University-year Science program as follows:



*Science:* Biology 61.101, Chemistry 65.010, Geology 67.100, Physics 75.010.

*Arts or Social Sciences:* Any Arts or Social Sciences course for which the student has the required prerequisite.

### First Year

The First-year program leading to the degree of Bachelor of Science consists of five credits approved for a First-year Science program including:

(a) two experimental Science credits chosen from two different departments of Biology, Chemistry, Geology or Physics;

(b) a Science credit chosen from an approved third different experimental Science or approved credits in Mathematics or Computer Science.

(c) two additional credits chosen from Science, Mathematics, Arts, Social Sciences, Computer Science (except Computer Science 95.100★ or 95.101★) or Engineering.

Students who have declared a Major or Honours in a Mathematics program in their First year may replace one of the experimental Sciences under (a) by a credit in Computer Science (except Computer Science 95.100★ or 95.101★).

In establishing their First-year program of courses, students should consult with the chairman of their Major department, the chairman of the Integrated Science Studies Committee, or the chairman of the appropriate interdepartmental committee. Students who have not yet selected a Major field should select those First-year courses that will give them a wide choice of fields for the Second year.

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### Courses Approved for a First-Year Science Program

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#### Science Courses

##### Biology

- 61.100 Current Concepts in Biology (see "Notes on Programs" p. 339)
- 61.101 Introductory Biology; or if one of these courses has been completed in Qualifying University year, one credit from:
- 61.201★ Animals: Form and Function
- 61.202★ Plants: Form and Function
- 61.215 Genetics
- 61.220★ Cell Physiology
- 61.261★ Introduction to Ecology

##### Chemistry

- 65.010 Introductory Chemistry
- 65.100 General Chemistry; or if this course has been completed prior to First year, with permission:
- 65.210 Physical Chemistry
- 65.220 Organic Chemistry
- 65.222 Organic Chemistry
- 65.230 Analytical Chemistry
- 65.231★ Analytical Chemistry

##### Computer Science

- 95.102★ Introduction to Computers
- 95.103★ Introduction to Scientific Computing
- 95.105★ Introduction to Programming
- 95.106★ Computer Applications

##### Geography

- 45.210★ The Physical Environment
- 45.211★ Geomorphology and Environmental Management

##### Geology

- 67.100 Principles of Geology
- 67.101 General Geology, or if one of Geology 67.100 or 67.101 has been completed prior to First year, with permission, any two of:
- 67.221★ Crystallography and Optical Mineralogy
- 67.222★ Mineralogy
- 67.228★ Petrography and Geochemistry of Igneous Rocks
- 67.233★ Sedimentology and Stratigraphy I
- 67.234★ Palaeontology I
- 67.281★ Field Geology I
- 67.282★ Field Geology II

##### Mathematics

- 69.107★ Elementary Calculus I
- 69.117★ Elementary Algebra
- 69.102 Calculus
- 69.112 Algebra
- 69.207★ Elementary Calculus II
- 69.217★ Linear Algebra
- 69.257★ Introduction to Statistics or any Mathematics course for which the student has the prerequisite.

##### Physics

- 75.010 Pre-University Physics
- 75.100 Introductory Physics
- 75.105 Introductory Physics, or if one of 75.100 or 75.105 has been completed prior to First year, with permission, any two of:
- 75.211★ Mechanics and Properties of Matter
- 75.222★ Wave Motion and Optics
- 75.235★ Electricity and Magnetism
- 75.236★ Physics of Electrical and Electronic Measurements I

### Arts and Social Science Courses

Any course available to a First-year Arts or Social-Sciences student with the exception of:

- (a) Social Science courses as listed on p. 330
- (b) any Computer Science course;
- (c) any course offered by the Departments in the Faculty of Science. Advanced courses in certain disciplines may be included if the prerequisite has been completed prior to First year; and
- (d) any Engineering course.

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### Courses for Subsequent Years

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#### Major Program

Candidates will ordinarily take at least ten credits beyond the completion of First year:

- (a) at least four more credits in the Major subject;
- (b) at least two Science credits above the First-year level in a department or departments other than the Major department;
- (c) sufficient electives to meet the program requirement of two Arts or Social Science electives and one free option.

The program of each student is under the direct supervision of a full-time member of the department in which the student takes his or her Major. In several departments most of the more advanced courses will be given, in whole or in part, during the day only. Candidates are advised to consult their Major departments as early as possible to arrange their programs.

Integrated Science Studies Program

For course requirements see p. 360.

Honours Program

Students for a degree with Honours will ordinarily take at least 15 credits beyond the completion of First year. (See note p. 000 regarding transfers to the Faculty of Science from other institutions or faculties.)

For continuance in an Honours program, the student must maintain a grade-point average of 6.0 or better in the Honours subject(s), an overall grade-point average of 4.0 or better and be recommended by the Honours department or committee. At the beginning of his or her last five credits the student must have:

- (a) a grade-point average of 6.0 or better in the Honours courses;
- (b) an overall grade-point average of 4.0 or better;
- (c) a grade of C- or better in at least half of the credits to be credited toward his or her degree;
- (d) the recommendation of his or her Honours department or committee. Otherwise the student may not remain in Honours.

Note:

B.Sc. Combined Honours programs with Computer Science have a higher grade-point average requirement for continuance than that stated above. Please refer to the appropriate departmental section of this Calendar for further details (p. 383 for the Department of Physics or p. 368 for the Department of Mathematics and Statistics.)

The course patterns for each Honours program are detailed individually, and requirements lie within the discretion of the appropriate department or committee. The student should therefore read the appropriate Calendar instructions and consult the chairman of the appropriate department or committee. Capacities for Honours students will depend on departmental resources and the nature of the program.

Regulations governing Honours essays, these or special projects are detailed in the departmental sections of this calendar.

A student who fails to maintain Honours standing may not remain in Honours, and must discuss a new program with the chairman of a department.

Science Continuation Courses

- 1. All courses offered in the Faculty of Science beyond First year except Biology 61.216★, 61.262★, and 61.393★ and Geology 67.383★.
- 2. All courses offered in Computer Science except Computer Science 95.100★ and 95.101★. A maximum of two half credits at the 100 level in Computer Science (excluding 95.100★ and 95.101★ completely) may be used as Science Continuation course credits.

Technology, Society, Environment (TSE) 59.300, 59.401★, 59.402★, 59.403★, 59.404★. (Biology Major and Honours students may use these courses only as free options. Integrated Science Studies students may take these courses as part of their program but may not count them as part of their science sequence.)

Geography 45.201★, 45.210★, 45.211★, 45.303★, 45.308, 45.311★, 45.312★, 45.324★, 45.325★, 45.326★, 45.345★, 45.400★, 45.402★, 45.411★, 45.412★, 45.413★, 45.414★, 45.415★, 45.418★, 45.424★.

Psychology 49.200, 49.220★, 49.270★, 49.300, 49.320, 49.321★, 49.322★, 49.324★, 49.325★, 49.350, 49.351★,

49.352★, 49.355★, 49.370, 49.372★, 49.375★, 49.380, 49.401★.

- 3. All courses offered in the Bachelor of Engineering program beyond First year, subject to the approval of the Faculty of Engineering.

Notes:

- 1. Computer Science 95.100★ and 95.101★ are not acceptable for credit in the Faculty of Science.
- 2. The following courses are acceptable only as free options for Science students: Biology 61.190, 61.191★, 61.192★, 61.216★, 61.262★, 61.393★, Chemistry 65.107, Geology 67.383★, Mathematics 69.141★, 69.142★, Physics 75.190, 75.195, Science 60.100.
- 3. All Science Continuation courses taken outside the Major Department must be approved by the student's Major department or committee.
- 4. Courses counted in the Science sequence of the Integrated Science Studies Program will be determined and approved by the Integrated Science Studies Committee.
- 5. Biology Major and Honours students should refer to *Notes on Programs* (p. 339) for special Science Continuation course provisions that apply to them.

Social Science Courses not Acceptable as Social Science Electives

Accounting  
All Business courses in Accounting

Economics  
43.220, 43.404★, 43.405★.

Geography  
45.201★, 45.210★, 45.211★, 45.303★, 45.308, 45.311★, 45.312★, 45.324★, 45.325★, 45.326★, 45.345★, 45.400★, 45.402★, 45.411★ (Geology 67.415★), 45.412★, 45.413★ (Engineering 82.441★, Geology 67.419★), 45.414★, 45.415★, 45.418★, 45.424★, (Engineering 82.424★, Geology 67.417★).

Psychology  
49.200, 49.220★, 49.270★, 49.300, 49.320, 49.321★, 49.323★, 49.324★, 49.325★, 49.350, 49.351★, 49.352★, 49.355★, 49.370, 49.372★, 49.375★, 49.380, 49.401★.

Sociology  
53.370.

Academic Standing

Grading System

Standing in courses will be determined by departments and will be shown by alphabetical grades.

The grades used, with their corresponding grade points, are as follows:

A+	12	B+	9
A	11	B	8
A-	10	B-	7
C+	6	D+	3
C	5	D	2
C-	4	D-	1



Standings to represent special circumstances are as follows:

#### **Aeg**

Pass standing granted although absent from final examinations. Aegrotat standing is granted only by the Science Committee on Admission and Studies in response to a student's application which meets the stipulations for examinations.

#### **F**

Failure. No academic credit.

#### **FNS**

Failure, but with supplemental privileges withdrawn because of incomplete term work or an unacceptably low mark in the examination. No academic credit.

#### **Wdn**

Withdrawn in good standing. No academic credit.

#### **Abs**

Failure due to absence from the final examination where the necessary term work has been completed. No supplemental privileges. No academic credit.

#### **Def**

Students who are absent from final examinations or who are unable to complete their course work for medical or compassionate reasons may apply to the Science Committee on Admission and Studies for deferred examination privileges.

#### **IP**

In Progress

### **Course Load**

The normal course load for a full-time student in the Faculty of Science, during the Fall/Winter session, is the equivalent of five credits. The normal course load for a part-time student, in the Fall/Winter session, is the equivalent of two credits.

Students may register for a maximum of two credits in the Summer session, i.e. two Evening courses, or one Evening and one Day course, or two Day courses.

A student may exceed the normal course load in the Fall/Winter session only with the Registrar's permission, which may be granted if a C average is maintained overall and in the Major field, and if recommended by the Major department. Part-time students may be granted permission if a C average is obtained in a minimum of two credits in the previous session.

### **Promotion and Failure**

#### *Full-time Students*

Full-time students in First-year Science, in order not to fail their year in May, must, by then, have passed at least three credits. Students who fail to meet this requirement must apply by June 30 for readmission to the Faculty of Science; students who fail First-year Science for a second time are not eligible to apply for readmission to the Faculty of Science.

To be promoted to the credit system from First year, a full-time Science student must have passed at least four credits including at least three credits in Science. The three credits in Science must include at least one credit in each of two different experimental Sciences. The remaining Science credit may be chosen from an ap-

proved different experimental Science or from approved credits in Mathematics or Computer Science. Students who have declared a Major or Honours in a Mathematics program may replace one of the two required experimental Sciences with a credit in Computer Science. In addition, students must obtain grades of C- or better in at least two credits, including at least one credit in their intended Major.

For a student without advanced standing in any First-year courses, these four credits must be selected from those approved for a First-year Science program.

For a student (not repeating First year) with advanced standing in some First-year courses, these four credits must include sufficient courses to complete the First-year Science program; the remainder of the four credits may include courses beyond the First year provided the student has retained credit for the prerequisite First-year courses. In the Major program one of the grades of C- or better must be in the intended Major subject. In the Integrated Science Studies program, the student must have attained a grade of C- or better in one credit from each of the Science and Non-Science sequences.

This must be accomplished in one calendar year (12-month period) with not more than two Summer courses, supplemental or grade-raising examinations. The course work of those First-year Science students who almost meet promotion requirements is reviewed by the Dean's Committee on Promotion.

A full-time student who does not meet the requirements of promotion by the end of August examinations will have failed First year.

#### *Part-time Students*

To be promoted to the credit system from First year, part-time students must, in the first six final examinations, have passed at least four credits approved for a First-year Science program including at least three credits in Science. The three credits in Science must include at least one credit in each of two different experimental Sciences. The remaining Science credit may be chosen from an approved different experimental Science or approved courses in Mathematics or Computer Science. Students who have declared a Major or Honours in a Mathematics program may replace one of the two required experimental Sciences with a credit in Computer Science. In addition, students must obtain grades of C- or better in at least two credits, including at least one credit in their intended Major. Part-time students who fail more than two full-credit equivalents in succession must apply for readmission to the Faculty of Science.

In the Major program, one of the grades of C- or better must be in the intended Major subject. In the Integrated Science Studies program, the student must have obtained a grade of C- or better in one credit from each of the Science and Non-Science sequences.

#### *All Degree Students*

Failed students within the limitations specified above may repeat First year without encumbrances, retaining credit toward their degree (but not toward the completion of First year) for all courses graded C- or better.

A student repeating First year may register only in courses approved for a First-year Science program, but may include two credits beyond the First year provided the student has retained credit for the prerequisite First-year course.

A student who fails First year a second time may not re-enter a degree program in the Faculty of Science.

After promotion to the credit system, the student will accumulate course credits under a pattern approved by the appropriate department or committee.

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### Supplemental Examination Privileges

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*First-year full-time students* may write supplemental or grade-raising examinations in two credits or equivalent, provided that success in these examinations will complete the First-year program.

*First-year part-time students* may write supplemental or grade-raising examinations in two credits or equivalent in the first four credits of their degree program.

*Major degree students* have the privilege of writing supplemental or grade-raising examinations, or repeating or replacing courses, subject to the following restriction: After admission to the credit system the ratio of total number of (full-course equivalent) examinations to the total number of credits required may not exceed three to two. In particular, a student who requires ten more credits has the equivalent of at most 15 full-course examinations available to complete his or her program.

*Honours degree students* have the privilege of writing supplemental or grade-raising examinations, or repeating or replacing courses subject to the following restriction: After admission to the credit system, the ratio of total number of (full-course equivalent) examinations to the total number of credits required may not exceed six to five. In particular, a student who requires 15 more credits has the equivalent of at most 18 full-course examinations available to complete the program.

The number of examinations available to a student who transfers from another institution or from another program, will be determined on a *pro rata* basis and will be specified at the time of admission.

When a student is examined in a course that previously has been declared extra to the degree program, this examination does not affect the remaining number of available examinations.

Students who cannot complete their program without exceeding the available number of examinations forfeit their undergraduate status in the Faculty of Science.

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### Graduation

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#### General Regulations

1. Every student will be required to complete at least the last five credits at Carleton;
2. A student who takes courses elsewhere with a Letter of Permission from the Science Committee on Admission and Studies may, with the approval of the appropriate department or committee, use the credit value but not the grades to meet graduation requirements;
3. Students who transfer to the Faculty of Science from another institution must include in the courses presented for degree (whether obtained at Carleton or elsewhere) at least:
  - (a) two credits of Arts or Social Science electives if on transfer they received credit for less than ten credits;
  - (b) one credit of Arts or Social Science electives if on transfer they received credit for ten or more credits.

*Note:*

See also University graduation regulations, pp. 42-43.

#### Major Degree Students

To qualify for graduation a student must:

1. present credits for 15 approved full courses (or equivalent) beyond Qualifying-University year with not more than two credits below the 100 level and not more than seven below the 200 level;
2. have a grade of C- or better in at least half of the 15 credits;
3. have an average of C- or better in the credits in his or her Major subject or subjects;
4. after entry to the credit system, have completed the program with not more than three (full-course equivalent) examinations for every two credits required. (Examinations include supplemental and grade-raising examinations, course repetitions and replacements.) A part-time student or a full-time student who has interrupted his or her studies must complete the program within seven years after entry to courses beyond First year;
5. include at least two credits in the Major subject or subjects in the last five credits taken for credit;
6. be recommended by the Major department(s) and the Science Faculty Board (see general regulation 3).

To meet the requirements for the C- average in the Major stated above, only those credits in the Major necessary to make up the required total for graduation in the Major department need be counted. All obligatory courses must be counted.

Graduating students in a Major program of the Faculty of Science will be designated as graduating "with Distinction" if:

1. they have no course failures, course repetitions, course replacements or grade-raising examinations on their Carleton record after promotion to the course-credit system;
2. they have achieved an overall grade-point average of 8.0 or better calculated on their Carleton record, including all credits extra to the degree;
3. they have successfully completed at Carleton at least ten credits counted toward the degree;
4. after promotion to the course-credit system, they have achieved a grade-point average of 9.5 or better calculated on all Carleton credits being counted toward the degree.

#### Integrated Science Studies Degree Students

See p. 360.

#### Honours Degree Students

To qualify for graduation with a Bachelor of Science degree with Honours a student must:

1. present credits for at least 20 credits of approved full courses (or equivalent) beyond Qualifying-University year, with not more than two credits below the 100 level and not more than seven below the 200 level;
2. meet the requirements of the Faculty of Science and of the appropriate department or committee with respect to both course and grade requirements;
3. after entry to the credit system, have completed the program with not more than six (full course equivalent) examinations for every five credits required. (Examinations include supplemental and grade-raising examina-



tions, course repetitions and replacements.) A part-time student or a full-time student who has interrupted his or her studies must complete the program within seven years after entry to courses beyond First year;

4. include at least two credits in the Honours subject or subjects in the last five credits taken;

5. be recommended by the appropriate department or committee and the Science Faculty Board.

The Honours degree will not be awarded to students taking fewer than five credits at Carleton.

### Designations of Honours Degrees

Three designations of Honours are awarded, determined on the basis of the grade-point average as follows:

#### *Highest Honours*

10.0 — 12.0 in Honours subject, and  
8.0 or better overall

#### *High Honours*

9.0 or better in Honours subject, and  
7.0 or better overall

#### *Honours*

6.5 or better in Honours subject, and  
5.0 or better overall

Departments may recommend the higher designation of Honours degree in the case of a student one of whose indices is in the appropriate higher range and the other within 0.2 grade points of the higher range.

To determine the class of degree for students with Combined Honours, the average is taken in each of the two subjects and the simple average of the two is used. If agreeable to the committee concerned, the final average may be computed on the basis of the weighted average of the required number of Honours credits in the two subjects.

Departments may use discretion for establishing the class of degree in counting the number of Honours credits where students have more than the minimum number of credits.

Students admitted to an Honours program prior to September, 1980, may have the following designations of classes of Honours shown on their degrees and determined on the basis of the grade-point average indicated:

#### *First Class*

9.0 — 12.0 in Honours subject, and  
7.0 or better overall

#### *High Second Class*

8.0 or better in Honours subject, and  
6.0 or better overall

#### *Second Class*

6.0 or better in Honours subject, and  
4.0 or better overall

Students admitted to an Honours program prior to March, 1977, may have the following designations of classes of Honours shown on their degrees and determined on the basis of the grade-point average indicated:

#### *First Class*

9.0 — 12.0 in Honours subject, and  
6.0 or better overall

#### *High Second Class*

8.0 or better in Honours subject, and  
5.0 or better overall

#### *Second Class*

6.0 or better in Honours subject, and  
4.0 or better overall

In addition, students admitted to an Honours program prior to September, 1977, may be awarded an Honours degree with *Third Class Honours* based on a grade-point average of 4.0 or better in the Honours subject and 3.6 or better overall.

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### Academic Clubs and Societies

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The following clubs and societies operating on the campus serve to broaden and enrich the curriculum, and to offer students social activity and friendship related to their intellectual interests. The societies listed here are particularly pertinent for students registered in the Faculty of Science.

*The Biology Society* sponsors academic and social events, promotes informal contact between students and faculty, and helps acquaint students with on-going biological research. Faculty adviser: Dr. M.B. Fenton.

*The Canadian Society for Chemistry*, through its Carleton University Student Chapter, is active in sponsoring a number of professional and social activities throughout the year.

*The Geology Society* sponsors lectures on geological topics, and organizes field trips and social events for all undergraduate students with an interest in geology.

*MATHSOC, the Carleton University Mathematics Society*, features "Naive-Level Seminars" designed by and for mathematics undergraduates. The society office promotes contact between students at different stages in their studies. Faculty co-ordinator: R.M. Herz-Fischler.

Carleton's *High School Mathematics Club* organizes a weekly evening meeting of films, lectures, workshops and problem sessions for local high school students seriously interested in mathematics. Faculty co-ordinator: John Poland.

*The Physics Society* sponsors visits to government and industrial laboratories in the Ottawa area, arranges special lectures on physics topics and social events for those interested in physics.

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### Science Courses without Prerequisites and Recommended to Students in Other Faculties

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#### *Biology*

- 61.101 Introductory Biology
- 61.190 Biology and Man
- 61.191★ Sociobiology
- 61.192★ Natural History
- 61.262★ Ecology in Architecture
- 61.393★ Biology and Development of Renewable Resources

#### *Chemistry*

- 65.010 Introductory Chemistry
- 65.107 The Chemistry of Art and Artifacts

#### *Geology*

- 67.100 Principles of Geology
- 67.101 General Geology

Mathematics

69.141★ Gambling I

Physics

75.010 Pre-University Physics

75.190 Introduction to Astronomy

75.195 Physics of Music

Science

60.100 Man in His Environment



## Officers of Instruction

### Director

To be announced

### Professors

B. Hollebone  
K.B. Storey  
C.S. Tsai  
H. Yamazaki

## Members of the Institute

### Members

J.W. ApSimon (*Chemistry*)  
P. Buist (*Chemistry*)  
D.R. Gardner (*Biology*)  
B. Hollebone (*Chemistry*)  
V.N. Iyer (*Biology*)  
K.W. Joy (*Biology*)  
J.M. Neelin (*Biology*)  
J. Sinclair (*Biology*)  
K.B. Storey (*Biochemistry and Biology*)  
C.S. Tsai (*Chemistry*)  
J.A. Webb (*Biology*)  
D.C. Wigfield (*Chemistry*)  
F. Wightman (*Biology*)  
R.H. Wightman (*Chemistry*)  
H. Yamazaki (*Biology*)

### Associate Members

S.A. Narang (*Adjunct Professor of Chemistry*)  
V.L. Seligy (*Adjunct Professor of Biology*)  
I.C.P. Smith (*Adjunct Professor of Chemistry*)

## Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 332-333), in addition to all regulations and requirements of the Institute as set out below.

## Honours Program

### Honours Bachelor of Science in Biochemistry and Biotechnology

See description of this special program on pp. 345-346.

### Honours Bachelor of Science in Biochemistry

The Institute of Biochemistry offers a four-year program leading to an Honours B.Sc. in Biochemistry, intended to provide a broad basic training for students planning a career in a biochemical field. Several courses in Biology and Chemistry (and resources from these departments) are integrated into the program to provide the background in these disciplines that is fundamental to an understanding of the biochemistry of animals, micro-organisms and plants.

Students entering the program must satisfy the general requirements for B.Sc. Honours (p. 328). The following 20 credits are required, taken in a pattern approved by the Director of the Institute:

1. Biology 61.100 or 61.101, 61.215, 61.325★, 61.335★ and one credit selected from approved 300- or 400-level Biology courses;
2. Chemistry 65.100, 65.210, 65.220, 65.231★ (65.251★), 65.320, (65.321★, 65.322★), 65.325★;
3. (a) Biochemistry 63.310 and 63.305★;  
(b) Biochemistry 63.401★, 63.402★, and 63.498;  
(c) At least one of Biochemistry 63.403★ and 63.404★;
4. Physics 75.100, Mathematics 69.107★, 69.117★ and at least one Mathematics half credit at the 200 level;
5. Two approved Arts or Social Science credits;
6. One and one-half credits, chosen in consultation, and related to the student's area of specialization. Some recommended courses include: Biochemistry 63.403★, 63.404★, Biology 61.321★, 61.330★, 61.351★, 61.392★, 61.417, 61.423, 61.424, 61.426★, 61.427★, 61.428★, 61.429★, 61.435, 61.455, Chemistry 65.311★, 65.312★, 65.353★, 65.354★, 65.420★, 65.422★, 65.423★, Physics 75.235★, 75.236★, Mathematics 69.207★, 69.208★, 69.217★, 69.257★ or 69.250, Computer Science 95.103★;
7. One free optional credit.

### Notes:

1. For the purposes of calculation, the "Honours subjects" include all Biochemistry courses, plus the Biology and Chemistry courses listed in items 1 and 2 above.
2. Physics 75.105 may be accepted in place of Physics 75.100 with the approval of the Director.
3. In choosing a program, students should consider the prerequisites required for any courses that they wish to take in later years.
4. Credit will not be given for Biology 61.220★ taken after Biochemistry 63.310 or equivalent.

## Graduate Program

No graduate program is offered by the Institute but the graduate offerings of the Departments of Biology and Chemistry include projects and courses that may be appropriate for students with an interest in biochemistry. Details are found in the Graduate Studies and Research Calendar.

## Courses Offered

### Biochemistry 63.305★

#### Practical Biochemistry

A laboratory and tutorial course introducing the basics of experimental biochemistry and illustrating the theory and concepts dealt with in Biochemistry 63.310.

Prerequisites: Chemistry 65.220 or 65.222; Chemistry 65.210 or Biology 61.220★. Biochemistry 63.310 or equivalent is recommended as a co-requisite.

Day division, Both terms: Five hours a week plus biweekly assignments.

### Biochemistry 63.310

#### General Biochemistry

Chemistry and metabolism of proteins, lipids, carbohydrates and nucleic acids. Mechanism of action of enzymes. Metabolic control mechanisms and inter-relations. Biological oxidation. Biosynthesis of structural,

storage and informational compounds.

Prerequisites: Chemistry 65.220 or 65.222; Chemistry 65.210 or Biology 61.220★.

Day division: Three lectures a week.

**Biochemistry 63.401★**

**Methods in Biochemistry**

The course deals with the principles and applications of modern biochemical methodology, including use of radio-isotope tracers, ultracentrifugation, electrophoresis and ion-exchange chromatography.

Prerequisite: Biochemistry 63.305★ or 63.310.

Day division, Fall term: Lectures and discussion two hours, laboratory six hours a week.

*H. Yamazaki*

**Biochemistry 63.402★**

**Biomacromolecules**

Biochemistry of polysaccharides, proteins and nucleic acids. Discussion of experimental approaches to purification and conformational studies of biomacromolecules, their interaction in solutions, function and regulation of enzymes. Workshop sessions include discussion of experimental design and interpretation, and solving of related numerical problems.

Prerequisite: Biochemistry 63.310.

Day division, Winter term: Lectures two hours, tutorial two hours a week.

*C.S. Tsai*

**Biochemistry 63.403★**

**Metabolic Regulation**

The course includes discussion of topics concerned with the regulation of intermediary metabolism.

Prerequisite: Biochemistry 63.310.

Day division, Fall term: Lectures three hours, workshop two hours a week.

**Biochemistry 63.404★**

**Industrial Biochemistry**

A course illustrating the application of Biochemistry to the production of biological compounds useful in nutrition, medicine, and the food and chemical industries. The course also reviews the general strategies for efficient production of these compounds by controlling the activities of living cells or enzymes.

Prerequisite: Biochemistry 63.310 or permission of the Institute.

Day division, Winter term: Lectures three hours a week.

*H. Yamazaki*

**Biochemistry 63.491★**

**Selected Topics in Biochemistry**

Selected topics of current interest in Biochemistry are offered upon approval by the Director in consultation with members of the Institute.

Day division.

**Biochemistry 63.498**

**Research Project**

Students carry out a research project in either the Biology or Chemistry departments, under the supervision of a faculty member. A report must be submitted to the supervisor by the last day of classes, and will be examined by a committee. Extension to the deadline will be allowed only with the permission of the Institute under exceptional circumstances.

Day division: Laboratory and associated work average at least eight hours a week.



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## Officers of Instruction

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### Chairman

D.R. Gardner

### Associate Chairman (Undergraduate Studies)

To be announced

### Associate Chairman (Graduate Studies)

H.G. Merriam

### Professor Emeritus

H.H.J. Nesbitt

### Professors

C.A. Barlow

W.E. Beckel

D.R. Gardner

H.F. Howden

V.N. Iyer

K.W. Joy

P.E. Lee

M.E. McCully

H.G. Merriam

J.M. Neelin

K.B. Storey

J.A. Webb

F. Wightman

H. Yamazaki

### Associate Professors

I.L. Bayly

T.W. Betz

G.R. Carmody

S.L. Jacobson

J.D.H. Lambert

S.B. Peck

J. Sinclair

D.A. Smith

P.J. Weatherhead

### Assistant Professor

N. Chaly

### Adjunct Professors

W.A. Keller (*Agriculture Canada*)

L. Lefkovitch (*Agriculture Canada*)

L. Masner (*Agriculture Canada*)

B.L.A. Miki (*Agriculture Canada*)

A. Nasim (*National Research Council*)

V.L. Seligy (*National Research Council*)

G. Setterfield

D.Y. Thomas (*National Research Council*)

D.M. Wood (*Agriculture Canada*)

*Curator of Cryptogamic Botany, To be announced*

*Curator of Greenhouses, H. Datema*

*Curator of Herbarium, I.L. Bayly*

*Curator of Zoology Museum, D.A. Smith*

*Co-ordinator, Natural History Centre, I.L. Bayly*

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## General Information

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Students intending to Major in Biology are strongly advised to acquire a good background in chemistry and physics as well as mathematics at the Grade 13 or equivalent level.

## Undergraduate Programs

The Department of Biology offers both Honours and Major programs leading to either a B.Sc. or a B.A. in Biology. Students enrolled in any of these programs must arrange their courses in consultation with the Chairman or Associate Chairman (Undergraduate Studies) of the department, in one of the patterns outlined below. None of the courses in the Department of Biology are offered by means of Challenge for Credit.

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## Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see pp. 332-333, Faculty of Science and p. 90, Faculties of Arts and Social Sciences), in addition to all departmental regulations and requirements as set out below.

For Biology Honours students, the Honours grade-point average is calculated on the basis of all Biology courses taken by a student during his or her degree program. For students in Biology Combined Honours programs, their Honours grade-point average will be calculated on the basis of all required credits in the two Major subjects as stated in the respective program requirements.

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## Major Programs

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### Bachelor of Science in Biology

The Bachelor of Science program in Biology recognizes the strong dependence of most modern biology on the physical sciences and mathematics. It treats biology as a unified subject based on common principles and qualities expressed in diverse ways by different organisms. The Major program is not primarily regarded as professional preparation by itself, but its aim is to provide a strong base in concepts and basic facts which should be adaptable to changing demands and needs in modern society. Students enrolled for a Bachelor of Science degree with a Major in Biology must satisfy the general requirements for Science stated on pp. 327-334 and take the following 15 credits in a pattern approved by the Chairman:

1. Six Biology credits to include 61.100† or 61.101†, 61.201★, 61.202★, 61.215, 61.220★, 61.261★, 61.325★, 61.335★, 61.361★;
2. Chemistry 65.100, Physics 75.100 or 75.105, Mathematics 69.107★ and 69.117★ or equivalent†;
3. Two additional Science credits above the 100 level and not in Biology†;
4. One additional Science credit†;
5. Two approved credits offered by the Faculties of either Arts or Social Sciences.
6. One free option credit.

† See *Notes on Programs*, p. 339.

### Bachelor of Arts in Biology

Students enrolled for a Bachelor of Arts degree with a Major in Biology must satisfy the general requirements of the Faculty of Social Sciences stated on pp. 81-91 and must maintain at least a C- average in Biology courses. The student will follow either the Major program or Combined Major program described on p. 98, in either

case the approval of the Chairman or Associate Chairman of the Department of Biology is required. For the Combined Major program, the student should also consult with the department of the other Major subject.

## Honours Programs

### Honours Bachelor of Science in Biology

The Honours program in Biology is primarily intended for students planning a professional career in research, teaching or administration in biology, or in one of the fields of applied biology, such as the health sciences, agriculture or environmental science. An Honours degree is usually essential for admission to graduate studies. Students planning such a career are strongly advised to enter the Honours program as early as possible, certainly by the end of the Second year. Students enrolled for the Honours B.Sc. degree in Biology must satisfy the general requirements for Honours stated on pp. 332-333 and take the following 20 credits in a pattern approved by the Chairman or Associate Chairman. (This allows specialization in such biological subdivisions as ecology, behaviour, cell and molecular biology, genetics, plant or animal physiology and development, systematics.)

1. Seven Biology credits to include Biology 61.100† or 61.101†, 61.201★, 61.202★, 61.215, 61.220★, 61.261★, 61.325★, 61.335★, 61.361★, 61.498;
2. Chemistry 65.100, Physics 75.100 or 75.105, Mathematics 69.107★ and 69.117★ or equivalent†;
3. Two additional Science credits above the 100 level and not in Biology†;
4. Four advanced Science credits, selected in consultation with a faculty member working in the area of specialization chosen by the student;
5. One additional credit, chosen in consultation, related to the student's area of specialization;
6. Two approved credits offered by the Faculties of either Arts or Social Sciences;
7. One free option credit.

†See *Notes on Programs*, p. 339.

Fourth-year students are strongly urged to attend the departmental research seminars.

Selection of Fourth-year courses can introduce into the student's program a certain amount of specialization. Possible areas of specialization include molecular, cellular and developmental biology, plant and animal physiology, ecology and systematics. Courses should be chosen in consultation with the Chairman or a faculty member working in an area close to the interest of the student. This consultation should preferably begin before entering the Third year, to ensure that courses that may be given only in alternate years are taken in the correct sequence. In any case, students must consult with the Chairman or Associate Chairman before registering in the Fourth year.

### Honours in Biology and Biotechnology

See pp. 345 to 346.

### Combined Honours in Biology and Physical Geography

Students desiring a comprehensive basic education in both biology and physical geography may apply for admission to a Combined Honours B.Sc. program. Appli-

cants must satisfy entry requirements of the Honours B.Sc. program.

Course requirements are as follows:

1. Biology 61.100† (or 61.101†), Mathematics 69.107★ and 69.117★, Chemistry 65.100 and one of Geology 67.100 or Physics 75.100 or 75.105. Physics must be taken in this program or Grade 13 Physics must be presented as an entrance credit.
2. Two optional credits that are acceptable courses offered by the Faculties of Arts or Social Sciences. A credit from geography courses *not* listed on p. 156, such as Geography 45.101, is recommended.
3. One additional Science credit from the list on p. 330 (Geology 67.100 or Physics 75.100 or 75.105 are recommended).
4. One free option credit.
5. Ten credits in Biology (or Biochemistry) and Physical Geography (see courses listed on p. 156) beyond First-year level, including at least one half credit involving a field course. Not more than six credits in this group should be taken in one department and not more than six may be at the 200 level.
6. One additional credit in Science or Computer Science above the 100 level, not in Biology or Geography and chosen in consultation with the student's program adviser.
7. Biology 61.498 or Geography 45.496.

†See *Notes on Programs*, p. 339.

### Combined Honours in Biology and Geology

Students desiring a comprehensive basic training in both biology and geology may apply for admission to a Combined Honours program, on completion of the First year of the Science program. Applicants must be of Honours standing and must have achieved grades of C+ or better in both Biology 61.100 or 61.101 (or 61.201★ and 61.202★)† and Geology 67.100.

Course requirements of the Combined Honours program are as follows:

1. Biology 61.100† or 61.101†, Geology 67.100, Mathematics 69.107★ and 69.117★. One of Chemistry 65.100, Physics 75.100 or 75.105. (The omitted subject, i.e. chemistry or physics, must have been taken at the Grade 13 level).
2. Ten credits in Biology (or Biochemistry) and Geology beyond First-year level, including at least one course involving a field camp. Not more than six credits in this group should be taken in one department and not more than six may be at the 200 level.
3. Biology 61.498 or Geology 67.498.
4. One half-credit in Statistics (Mathematics 69.257★ is recommended) and one half-credit in Computer Science (Computer Science 95.103★ is recommended).
5. Three optional credits, at least two of which must be acceptable credits offered by the Faculties of either Arts or Social Sciences.
6. A Science elective credit.
7. A language requirement must be met during the Third year by obtaining a credit in, or demonstrating reading proficiency in one of French, German, Russian, Spanish, Italian, Greek, or any language acceptable to the com-



mittee and in which suitable arrangements can be made for the examination.

†See *Notes on Programs*, below.

### Honours Bachelor of Arts in Biology

Students enrolled for the Honours Bachelor of Arts degree must satisfy the general requirements of the Faculties of Arts and Social Sciences stated on pp. 81-91, and must maintain at least C+ average in Biology courses and a C- average overall. The student will follow either the Honours program or the Combined Honours program described on p. 98. In either case, the approval of the Chairman or the Associate Chairman of the Department of Biology is required. For the Combined Honours program, the student should also consult the other Major department.

Second-year students in the Honours B.A. program are strongly advised to consult with the Biology Department regarding their choice of courses if they wish to take the Honours Research Project, Biology 61.498.

### †Notes on Programs

(See items marked † in programs on pp. 337, 338, 339).

Students who have completed Grade 13 Biology before entry to First year may take Biology 61.100. In special cases a student entering First year may be able to proceed directly into 200-level courses. Students who have achieved a mark of at least 80% in Grade 13 Biology may apply to take a placement test during registration week. The test will be designed to demonstrate an adequate comprehension of the principles of cell biology, genetics, plant and animal science, ecology, and evolution. All other students must take Biology 61.101.

It is important to take Biology 61.220★ in Second year; it is a critical prerequisite for other courses.

Students who do not meet the prerequisites or co-requisites for Physics 75.100 may substitute Physics 75.105 in its place, but it should be noted that Physics 75.100 is preferred as preparation for Biology 61.351★, 61.335★ and 61.435.

Students who have taken Mathematics 69.106★ (no longer offered) may use it as a free option or a 100-level Science option.

In choosing additional Science courses above the 100 level and not in Biology, students may select from the Science Continuation courses listed on p. 330. In their selections, recent Biology students have favoured Biochemistry 63.310, 63.305★, 63.401★, 63.402★, 63.403★; Chemistry 65.210, 65.222, 65.320; Geology 67.233★, 67.234★; Mathematics 69.250, 69.257★; Computer Science 95.103★; Geography 45.210, 45.308, 45.345; Psychology 49.220★, 49.221★, 49.270★. In addition, Chemistry 65.371★, Mathematics 69.207★, 69.208★, Physics 75.230, 75.291★, 75.292★ are suggested for some students. Biology Major and Honours students (except students in the B.A., B.A. Combined Major, B.A. Honours and B.A. Combined Honours programs) may use Technology, Society, Environment 59.300, 59.401★ or 59.402★ in fulfilling the degree requirements, but only as a free option.

### Graduate Program

The Department of Biology offers programs of study and research leading to M.Sc. and Ph.D. degrees in molecular, cellular and developmental biology, plant and animal physiology, ecology and systematics. Details will be found in the Graduate Studies and Research Calendar.

### Courses Offered

#### Note:

Students should note that Biology 61.100 and 61.101 are intended primarily for students wishing to take a Science degree. Students who wish to take a single Biology course should consider Biology 61.190, 61.191★, 61.192★ or 61.216★.

#### Biology 61.100†

##### Current Concepts in Biology

A lecture and laboratory course exploring in detail some of the current views and recent developments in various branches of biological science. A range of life processes and organisms is considered, illustrating fundamental concepts at the molecular, cellular, organism, and population levels of organization. Both lectures and laboratories will assume that the student already has sound background experience in biology. Precludes additional credits for Biology 61.101, 61.190.

Prerequisite: Ontario Grade 13 Biology or equivalent.

Day division: Lectures three hours a week, laboratory (including projects) three hours a week.

†See *Notes on Programs*, this page.

#### Biology 61.101†

##### Introductory Biology

A lecture and laboratory course for students who have little or no background in biology. The course provides an introduction to principles of biological science and includes various aspects of cell biology, metabolism, and genetics, and the evolution, structure, function and ecology of living organisms. The laboratory is similar to that in Biology 61.100. This course is designed for students who have not completed Grade 13 Biology or equivalent. Precludes additional credits for Biology 61.100, 61.190.

Day division: Lectures three hours a week, laboratory (including projects) three hours a week.

†See *Notes on Programs*, this page.

#### Biology 61.190

##### Biology and Man

A course for non-Science Majors covering major biological concepts that bear directly on human culture, experience and the quality of life. Typically, topics are drawn from areas such as heredity, growth and reproduction, nutrition, evolution and ecology.

Precludes additional credits for Biology 61.100, 61.101.

Not a Science credit for B.Sc. Biology Majors.

Not offered 1986-87.

#### Biology 61.191★

##### Sociobiology

A half-credit course designed for non-Majors to explore the behaviour of social animals. The material reviews the influence of evolution on strategies of feeding, use of space, and mating and reproduction.

Not offered 1986-87.

**Biology 61.192★**

**Natural History**

A course designed for non-Majors to investigate the natural history of plants and animals, and the communities in which they occur. Particular attention is paid to the Ottawa region, but appropriate examples from other locales are also included.

Day division, Winter term: Lectures three hours a week.

*I.L. Bayly*

**Biology 61.201★**

**Animals: Form and Function**

An investigation of invertebrates and vertebrates to relate their structure, function, behaviour and interactions with plants.

Precludes additional credit for Biology 61.200.

Prerequisite: Biology 61.100 (or Biology 61.101).

Day division, Winter term: Lectures three hours a week, laboratory four hours a week. It is recommended that Biology 61.201★ and 61.202★ be taken as a pair by full-time Biology Majors immediately after admission to the credit system.

**Biology 61.202★**

**Plants: Form and Function**

An introduction to the structure and development of higher plants (at molecular, cellular and organism levels) discussed in relation to their function.

Precludes additional credit for Biology 61.200.

Prerequisite: Biology 61.100 (or Biology 61.101).

Day division, Fall term: Lectures three hours a week, laboratory four hours a week. It is recommended that Biology 61.201★ and 61.202★ be taken as a pair by full-time Biology Majors immediately after admission to the credit system.

*M.E. McCully*

**Biology 61.215**

**Genetics**

A lecture and laboratory course on the mechanisms of inheritance and the nature of gene structure, composition and function.

Precludes additional credit for Biology 61.216★.

Prerequisite: Biology 61.100 or 61.101.

Day division: Lectures three hours a week, laboratory four hours a week. It is recommended that Biology 61.215 be taken by full-time Biology Majors immediately after admission to the credit system.

*V.N. Iyer*

**Biology 61.216★**

**Human Genetics and Evolution**

A course designed for non-Science Majors which develops the central concepts of genetics and evolution, using, wherever possible, examples drawn from studies of humans. Topics covered include: human reproduction and cell division; chromosomes; autosomal inheritance; sex and sex-linked inheritance; molecular basis of genes and gene function; mutation; genetic diseases; genetic engineering; genes, environment and behaviour; genes in populations; mechanisms of evolution; race; human evolution.

Precludes additional credit for Biology 61.215. Available to non-Biology Science Majors only as a free option.

Prerequisite: A general biology course at the Grade 13 level or above or Psychology 49.100. Day division, Fall term: Lectures three hours a week.

*J. Sampson*

**Biology 61.220★**

**Cell Physiology**

The cell concept and the basic processes fundamental to life at the cellular level.

Prerequisites: Biology 61.100 or 61.101 and Chemistry 65.100. Note: This course is a prerequisite for Biology 61.321★, 61.325★, 61.330★, 61.335★ and 61.351★.

Day division, Fall term: Lectures three hours a week, tutorial or laboratory four hours a week.

**Biology 61.261★**

**Introduction to Ecology**

An introduction to major concepts in ecology, their scientific basis and their implications for biology and human existence.

Prerequisite: Biology 61.100 or 61.101.

Day division, Fall term: Lectures or tutorials three hours a week; laboratory four hours a week. It is recommended that Biology 61.261★ and 61.361★ be taken as a pair by full-time Biology Majors in their Third year of study.

*H.G. Merriam*

**Biology 61.262★**

**Ecology in Architecture**

A course stressing ecological principles relevant to the practice of architecture, the relationship of the environment to architectural problems and the unity of the ecosystem with respect to the human condition.

Students registered in a Biology program may not take this course for credit.

Not offered 1986-87.

**Biology 61.305★**

**Invertebrate Zoology**

A course devoted to the study of invertebrate structure, physiology, ecology and behaviour.

Prerequisite: Biology 61.201★. Note: This course is a prerequisite for Biology 61.405.

Day division, Fall term: Lectures two hours a week, laboratory four hours a week.

*C.A. Barlow*

**Biology 61.309★**

**Morphology of Lower Plants**

The morphology, reproduction and evolution of lower plants.

Prerequisite: Biology 61.202★.

Not offered 1986-87.

**Biology 61.311★**

**Mycology**

The morphology, evolution and biological importance of the fungi.

Prerequisite: Biology 61.202★.

Not offered 1986-87.

**Biology 61.312★**

**Phycology**

An advanced half-credit course dealing with the occurrence, ecological role, morphology, reproduction and evolution of the algae.

Not offered 1986-87.

**Biology 61.321★**

**Cytology**

The structure, composition, function and development of the major systems of cells and their organelles.

Prerequisite: Biology 61.220★ or Biochemistry 63.300; the latter may be taken concurrently.

Day division, Winter term: Lectures three hours a week,



laboratory four hours a week.

*P.E. Lee*

#### Biology 61.325★

##### **Plant Physiology**

The main topics in physiology and metabolism of plants including nutrition, growth, germination and factors controlling these processes.

Prerequisite: Biology 61.220★ or Chemistry 65.220 or 65.222; Biology 61.202★ or permission of the Department.

Day division, Winter term: Lectures three hours a week, laboratory four hours a week. It is recommended that Biology 61.325★ and 61.335★ be taken as a pair by full-time Biology students in their Third year of study.

*J.A. Webb*

#### Biology 61.330★

##### **Introductory Microbiology**

The biology of microorganisms, particularly in relation to their physiology and economic significance.

Prerequisite: Biology 61.220★ or Biochemistry 63.310; the latter may be taken concurrently.

Day division, Winter term: Lectures three hours a week, laboratory four hours a week.

#### Biology 61.335★

##### **Animal Physiology**

The properties of physiological systems and components of animals with emphasis on their physico-chemical bases.

Prerequisites: Biology 61.220★ or Chemistry 65.210. Physics 75.100 or 75.105 and Mathematics 69.107★ and 69.117★ are strongly recommended.

Day division, Fall term: Lectures three hours a week, laboratory four hours a week. It is recommended that Biology 61.325★ and 61.335★ be taken as a pair by full-time Biology students in their Third year of study.

#### Biology 61.351★

##### **The Biophysics of Animal Movement**

A biophysical treatment of various types of animal motion. Topics covered include the properties of muscles, tendons, bones, joints and the co-ordinated use of these structures. Human locomotion and fitness, bird flight, especially the soaring of the vulture and the albatross, and animal migration are discussed in detail.

Prerequisites: Biology 61.220★ and Physics 75.100 or 75.105 or permission of the Department.

Day division, Winter term: Lectures three hours a week, tutorial or seminar one hour a week.

*J. Sinclair*

#### Biology 61.361★

##### **Analytical and Experimental Ecology**

A half-credit course utilizing the concepts presented in Biology 61.261★ and selected ecological experiments to analyze ecosystem types and the major factors that characterize them.

Prerequisite: Biology 61.261★.

Day division, Winter term: Lectures three hours a week, laboratory four hours a week. It is recommended that Biology 61.261★ and 61.361★ be taken as a pair by full-time Biology Majors in their Third year of study.

*H.G. Merriam*

#### Biology 61.363★

##### **Principles and Practices in Plant Ecology**

This half-credit course stresses the dynamics and structures of plant communities. Topics include community structure, nutrient cycling, animal-plant-substrate rela-

tionships, sampling and analytical techniques, and resource management.

Prerequisite: Biology 61.261★.

Not offered 1986-87.

#### Biology 61.365★

##### **Field Course**

A half-credit course providing students with an opportunity for intensive, continuous study of living organisms under natural conditions. Credit is based on two weeks of full-time field work with attendant assignments, selected from several one- or two-week modules with various instructors. Costs of long-distance transportation (if applicable), room and board relating to the course are borne by the student. Details may be obtained from the co-ordinator. (Also listed as Psychology 49.323★, animal behaviour modules only.)

Prerequisites: At least one course in Biology beyond the 100 level, and written permission of the Department. No more than one half credit may be obtained from Biology 61.365★.

Day division: All day, approximately six days a week, offered at different times during the year.

*S.B. Peck (Co-ordinator)*

#### Biology 61.370

##### **The Flora and Fauna of Canada**

An introduction to practical taxonomy and biogeography through field and laboratory study of representative Canadian plants and animals with emphasis on local forms. It is recommended that students make collections of plants and animals during the summer before the course is taken. Detailed directions may be obtained from the instructors.

Prerequisites: Biology 61.201★ and 61.202★.

Day division: Lectures two hours a week, laboratory four hours a week.

*D.A. Smith, J.D.H. Lambert*

#### Biology 61.391★

##### **Biology in Society**

A seminar half-credit course dealing with selected areas of biological knowledge with direct relevance to social activities of man. Not available as a continuing Science course for students other than Biology Majors except with permission of the student's Major department.

Prerequisite: Biology 61.201★ and 61.202★, 61.215 or permission of the department.

Evening division, Winter term: Seminar and discussion three hours a week.

#### Biology 61.392★

##### **Biologists in Canada**

A lecture/seminar half-credit course in which the contributions of selected biological and medical scientists to Canadian society are assessed individually and collectively. The emphasis is biographical and involves intensive student participation.

Prerequisite: A 200-level Biology course or permission of the Department.

Not offered 1986-87.

#### Biology 61.393★

##### **Biology and Development of Renewable Resources**

A lecture/seminar half-credit course for senior students in the Faculties of Arts and Social Sciences. Emphasis is placed on the role that biology and agriculture play in economic, technical, political and social development in Canada and in the Third World.

Prerequisites: Co-registration in advanced courses in the student's Major and permission of the Department.

Available to Science students only as a free option.  
Day division, Fall term: Seminar and discussion three hours a week.  
*J.D.H. Lambert*

Biology 61.405

**Invertebrate Zoology**

An advanced course on the classification, morphology, comparative physiology and evolution of invertebrate animals.

Prerequisite: Biology 61.305★ or permission of the Department.

Day division: Lectures three hours a week, laboratory four hours a week.

*S.B. Peck*

Biology 61.410

**Plant Morphogenesis**

A course dealing with the problems of plant development.

Prerequisites: Biology 61.202★ and permission of the Department.

Not offered 1986-87.

Biology 61.415

**Chordate Zoology**

An advanced course on the classification, geographic distribution and evolution of the major groups of chordates.

Prerequisite: Biology 61.201★ or permission of the Department.

Day division: Lectures three hours a week, laboratory four hours a week.

*D.A. Smith*

Biology 61.417

**Methods in Molecular Genetics**

The scope and purpose of the course is to review and acquire some familiarity with the successful use of genetic techniques in the solution of problems in molecular biology. Emphasis is on the laboratory, which is "unstructured," and on discussion of innovations in genetic techniques. The course is suitable for students with a developing interest in problems of molecular and cellular biology and biochemistry.

Prerequisites: Biology 61.215 or equivalent and a course in biochemistry or microbiology or permission of the Department.

Not offered 1986-87.

Biology 61.418

**Population Genetics**

A lecture and seminar course on both theoretical and experimental population genetics.

Prerequisite: Biology 61.215 or permission of the Department. A course in statistics is highly recommended.

Day division: Lectures two hours a week, laboratory two hours a week.

*G.R. Carmody*

Biology 61.423

**Analytical Cell Biology**

A lecture and laboratory course dealing with the theory and practice of modern analytical methods used in experimental cell biology. Emphasis is on methods that give information relating to cell structure or structure-function relations such as fixing, sectioning, staining, light and electron microscopy, autoradiography, photomicrography and biophysical methods. Some treatment of related biochemical techniques such as cell fractionation, electrophoresis and immunodiffusion is also included. The main emphasis is on independent lab-

oratory work.

Prerequisite: Biology 61.321★ or equivalent or permission of the Department.

Day division: Lectures two hours a week, laboratory five hours a week.

*P.E. Lee*

Biology 61.424

**Eucaryotic Cells and their Viruses**

A course dealing with the current state of knowledge of the structure, molecular organization, reproduction and functions of eucaryotic cells and their interactions with viruses. Students will do individual or small group projects using living cells to investigate basic cellular processes or virus-cell interactions. Each student will present one seminar on his or her project.

Prerequisite: Biology 61.321★ or permission of the Department.

Not offered 1986-87.

Biology 61.426★

**Advanced Plant Biochemistry**

A lecture and seminar course dealing with recent developments in selected areas of plant biochemistry.

Prerequisites: Biology 61.325★ and Chemistry 65.220 or 65.222 or permission of the Department.

Not offered 1986-87.

Biology 61.427★

**Topics in Crop Physiology**

An advanced lecture and seminar course concerning the world's major crop plants and dealing with topics selected from recent advances in metabolism, physiology, yield, disease and control of pest infestation.

Prerequisite: Biology 61.325★ or permission of the Department. Biochemistry 63.310 is recommended.

Not offered 1986-87.

Biology 61.428★

**Seed Development and Germination**

An advanced course dealing with the biochemistry and physiology of seed development and germination.

Precludes additional credit for Biology 61.425 (no longer offered).

Prerequisites: Biology 61.325★ and Chemistry 65.220 or 65.222 or permission of the Department.

Not offered 1986-87.

Biology 61.429★

**Advanced Plant Physiology**

An advanced course dealing with recent developments in selected topics of plant physiology.

Precludes additional credit for Biology 61.425 (no longer offered).

Prerequisites: Biology 61.325★ and Chemistry 65.220 or 65.222 or permission of the Department.

Day division, Winter term: Lectures two hours a week.

Biology 61.430★

**Topics in Applied Environmental Microbiology**

Environmental microbiology examines ecological interactions within microbial communities and between microorganisms and their biotic and abiotic environments. This course illustrates recent applications of such studies to the development of microbial processes of practical importance, such as treatment of wastes and pollutants, insect control, nitrogen fixation and production of foods, pharmaceuticals, fuels and other chemicals.

Prerequisites: Biology 61.330★, Biochemistry 63.310 or



permission of the Department.

Evening division, Winter term: Lectures/seminars two hours a week.

#### Biology 61.431★

##### **Current Topics in Biotechnology**

A lecture/seminar course that explores current usage and some practical problems of the industrial and technological exploitation of biological systems. Opportunity is provided for visits to operating production and research facilities.

Prerequisites: Biology 61.215, 61.330★, Biochemistry 63.310 or permission of the Department.

Not offered 1986-87.

#### Biology 61.432★

##### **In vitro Manipulation of Eucaryotic Cells**

A lecture and laboratory course on the theory and practice of cell and tissue culture using plant and animal cells. The following techniques are emphasized: media preparation, culture of primary explants, subculture using liquid and solid media, induction of differentiation, protoplasting of plant cells, cell fusion and isolation of heterokaryons, cloning of cell lines, anther culture. In addition, experience in the production, screening and use of polyclonal and monoclonal antibodies is provided. Prerequisites: Biology 61.215, 61.321★ and Biochemistry 63.310 (or equivalents) or permission of the Department. Day division, Fall term: Lectures two hours a week, laboratory four hours a week.

*N. Chaly*

#### Biology 61.435

##### **Animal Physiology**

A course dealing in some detail with advances made in particular areas of animal physiology. (1986-87: neurophysiology.)

Prerequisites: Biology 61.335★, Chemistry 65.220 or 65.222, and Physics 75.100 or 75.105, or permission of the Department.

Day division: Lectures two hours a week, laboratory four hours a week.

*D.R. Gardner*

#### Biology 61.440

##### **Taxonomy of the Flowering Plants**

A general survey of the flowering plants, the bases for classification and the history of taxonomy. A project is assigned.

Prerequisite: Biology 61.202★ or permission of the Department.

Not offered 1986-87.

#### Biology 61.447

##### **Quantitative Ecology**

Quantitative and qualitative analyses of the distribution and abundance of plant and animal species and communities, and of related environmental phenomena.

Prerequisite: Biology 61.261★ and 61.361★ and Mathematics 69.257★ or equivalent or permission of the Department.

Day division: Lectures two hours a week, laboratory four hours a week.

*C.A. Barlow*

#### Biology 61.455

##### **Animal Development**

A lecture, seminar and laboratory course on the descriptive and experimental parameters of animal development.

opment.

Prerequisites: Biology 61.201★ and permission of the Department.

Not offered 1986-87.

#### Biology 61.460

##### **Insect Morphology**

A course on the morphology, evolution and function of insect structures of the more important orders and families of insects. This course is complementary to Biology 61.461, which is offered in alternate years.

Prerequisite: Biology 61.201★ or permission of the Department.

Not offered 1986-87.

#### Biology 61.461

##### **Principles of Systematic Entomology**

A lecture and laboratory course devoted to the study of identification of insects, the principles of theoretical taxonomy, some aspects of insect behaviour and control measures. Instructions and equipment for the required insect collection can be obtained the spring prior to the course from the instructor. This course is complementary to Biology 61.460.

Prerequisite: Permission of the Department.

Day division: Lectures two hours a week, laboratory four hours a week.

*H. Howden*

#### Biology 61.469★

##### **Evolutionary Concepts**

Evolution as related to gene pools, isolation, speciation, natural selection, competition, dominance, and distributional patterns; examples from North American biota are emphasized.

Prerequisites: Biology 61.261★ and permission of the Department.

Not offered 1986-87.

#### Biology 61.471★

##### **Evolution and Biogeography**

A continuation of concepts developed in Biology 61.469★ and applied to world biotic patterns. Community evolution, tropical diversity and temporal stability are considered.

Prerequisite: Biology 61.469★ or permission of the Department.

Not offered 1986-87.

#### Biology 61.475

##### **History of Biology**

A seminar course on the history of biology and biological theory.

Prerequisites: Biology 61.215, a course in physiology at least concurrently, and permission of the Department.

Not offered 1986-87.

#### Biology 61.481★

##### **Animal Behaviour**

An advanced half-credit course in the study of animal behaviour. Topics such as predator-prey interactions, mating behaviour, migration, mother-young interactions, social behaviour and inter- and intra-specific spacing behaviour are interpreted in an ecological context. Lectures, seminars and laboratories are used to achieve this coverage.

Prerequisites: Biology 61.335★ and 61.261★ and 61.361★ (or suitable equivalents) and written permission of the Department. Enrolment limited.

Not offered 1986-87.

Biology 61.490

**Directed Special Studies and Seminar**

Day division: Annually, with permission of the Department.

Biology 61.491★

**Directed Special Studies**

Day division, both terms: Annually, with permission of the Department.

Biology 61.497

**Independent Study**

A course for independent research and study from library sources, under the supervision of a member of the department, open only to students in the Honours B.A. programs. A major paper reporting the research must be submitted to the supervisor by April 1 of the Winter session or August 15 of the Summer session and the student will be examined orally on the topic of the paper by a panel of three faculty members.

Precludes additional credit for Biology 61.498.

Biology 61.498

**Research Project**

Fourth-year B.Sc. Honours students must carry out a research project under the supervision of a member of the Department. Fourth year B.A. Honours students may take Biology 61.498 if they demonstrate to the Associate Chairman for Undergraduate Studies that they have adequate experience in the laboratory. Approval of the topic and research schedule must be obtained from the Supervisor and Chairman before the last day for late registration. Each student's performance is examined by a faculty committee after the completion of the project. 70% of the grade is awarded by the supervisor based on the completed research report, and the student's performance in the project. 30% of the grade is awarded by the supervisor and two advisers based on the report. The written report must be submitted by the last day for submission of course assignments. Extensions of the deadline will be allowed only at the discretion of the Chairman of the Department.

Precludes additional credit for Biology 61.497.



## Biotechnology Co-ordinator

V.N. Iyer

### General Information

Biotechnology is concerned with the design, modification and controlled use of living organisms and their metabolic systems to carry out a wide range of useful processes in agriculture, manufacturing and service industries. This is an important and growing field for the application of biological studies to industrial, commercial, agricultural and environmental problems. Important areas include fermentation and enzyme technology, genetic engineering and other cellular manipulations.

### Biotechnology at Carleton

A number of scientists at Carleton carry out research in topics related to biotechnology. Some areas currently under investigation include:

Metabolic engineering and applied microbiology;

Genetic engineering;

Natural products for biological control;

Cell and tissue technology.

By completing a particular pattern of options in Biology or Biochemistry, undergraduates interested in careers in this expanding area can qualify for an Honours B.Sc. in Biology and Biotechnology, or in Biochemistry and Biotechnology. These programs provide the basic grounding in biology and chemistry, yet allow inclusion of specialized courses related to biotechnology. The biology version allows for more emphasis at the cell and organizational level, while the biochemistry version has a greater concentration at the molecular level. One of the requirements is completion of an Honours research project in a topic related to current studies in biotechnology. In special cases, students may carry out the project in a local laboratory outside of the University, with joint supervision by a faculty member and an outside scientist. Such arrangements must be approved individually by the department/institute and Biotechnology Co-ordinator. When possible, special courses will be offered in subjects of direct application in biotechnology.

Courses required for the Biotechnology designation (in addition to other program requirements) include: Organic Chemistry (Chemistry 65.220 or 65.222), Statistics (Mathematics 69.257★), General and Industrial Biochemistry (Biochemistry 63.305★, 63.310, 63.404★), Cytology (Biology 61.321★), Introductory Microbiology (Biology 61.330★), Molecular Genetics or Cell Biology (Biology 61.417 or 61.423), and at least a half credit in Biotechnology (Biology 61.430★, 61.431★, or 61.432★).

### Honours in Biology and Biotechnology

Course requirements are 20 credits, in a pattern approved by the Biotechnology Co-ordinator:

1. Eight Biology credits: Biology 61.100 (or 61.101), 61.201★, 61.202★, 61.215, 61.220★, 61.261★, 61.321★, 61.325★, 61.335★, 61.330★, 61.361★, one of 61.430★, 61.431★, 61.432★, and one of 61.417 or 61.423.

2. Two Biochemistry credits: Biochemistry 63.310, 63.305★, 63.404★.

3. Two Chemistry credits: Chemistry 65.100, 65.220 or 65.222.

4. One Physics credit: Physics 75.100 or 75.105.

5. One-and-one-half Mathematics credits: Mathematics 69.107★, 69.117★, 69.257★.

6. One-and-one-half credits to be chosen from Biology 61.417, 61.423, 61.424, 61.427★, 61.428★, 61.430★, 61.431★, 61.432★, Biochemistry 63.401★, 63.402★, Chemistry 65.210, 65.370★, Technology, Society, Environment 59.401★, and 59.402★. In special cases, other advanced Science courses may be approved by the Biotechnology Co-ordinator.

7. Two approved credits offered by the Faculties of Arts or Social Sciences.

8. One free optional credit.

9. A research project (Biology 61.498) in an area approved by the Biotechnology Co-ordinator.

### Honours in Biochemistry and Biotechnology

Course requirements are 20 credits, in a pattern approved by the Biotechnology Co-ordinator:

1. Five Biology credits: Biology 61.100 (or 61.101), 61.215, 61.321★, 61.330★; one of 61.325★ or 61.335★; one of 61.417 or 61.423; one of 61.430★, 61.431★ or 61.432★.

2. Three Biochemistry credits: Biochemistry 63.305★, 63.310, 63.401★, 63.402★, 63.404★.

3. Five Chemistry credits: Chemistry 65.100, 65.210, 65.220, 65.231★, 65.320, 65.321★, 65.322★, 65.325★.

4. One Physics credit: Physics 75.100.

5. One-and-one-half Mathematics credits: Mathematics 69.107★, 69.117★, 69.257★.

6. One credit chosen from Biology 61.325★, 61.335★, 61.417, 61.423, 61.424, 61.430★, 61.431★, 61.432★, Biochemistry 63.403★, Chemistry 65.370★. In special cases, other advanced Science courses may be approved by the Biotechnology Co-ordinator.

7. Two approved credits offered by the Faculties of Arts or Social Sciences.

8. One-half credit free option.

9. A research project (Biochemistry 63.498) in an area approved by the Biotechnology Co-ordinator.

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Typical Course Patterns

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**Biology and Biotechnology**

*First Year*

Biology 61.100 (or 61.101);  
 Chemistry 65.100;  
 Physics 75.100 (or 75.105);  
 Mathematics 69.107★, 69.117★;  
 One credit, Arts or Social Sciences option.

*Second Year*

Biology 61.201★, 61.202★, 61.215, 61.220★, 61.330★;  
 Chemistry 65.220 or 65.222;  
 One credit, Arts or Social Sciences option.

*Third Year*

Biology 61.325★, 61.335★, 61.261★, 61.361★, 61.321★,  
 Biochemistry 63.310 and 63.305★;  
 Mathematics 69.257★;  
 One half credit, free option.

*Fourth Year*

Biology 61.423 or 61.417;  
 One-and-a-half advanced option credits (see 6 above);  
 Biochemistry 63.404★;  
 Biology 61.430★, 61.431★ or 61.432★;  
 Biology 61.498;  
 One half credit, free option.

**Biochemistry and Biotechnology**

*First Year*

Biology 61.100 (or 61.101);  
 Chemistry 65.100;  
 Physics 75.100;  
 Mathematics 69.107★, 69.117★;  
 One credit, Arts or Social Sciences option.

*Second Year*

Biology 61.215, 61.330★;  
 Chemistry 65.210, 65.220, 65.231★;  
 One credit, Arts or Social Sciences option.

*Third Year*

Biology 61.325★ or 61.335★;  
 Biology 61.321★;  
 Biochemistry 63.305★, 63.310;  
 Chemistry 65.321★, 65.322★, and 65.325★;  
 Mathematics 69.257★;  
 One half credit, free option.

*Fourth Year*

Biology 61.417 or 61.423;  
 One advanced option credit (see 6 above);  
 Biochemistry 63.401★, 63.402★, 63.404★;  
 Biology 61.430★, 61.431★ or 61.432★;  
 Biochemistry 63.498.



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## Officers of Instruction

---

*Chairman*  
D.R. Wiles

*Professors*  
C.H. Amberg  
J.W. ApSimon  
R.G. Barradas  
G.W. Buchanan  
C.L. Chakrabarti  
B.R. Hollebone  
J.A. Koningstein  
P. Kruus  
C.S. Tsai  
D.C. Wigfield  
D.R. Wiles  
J.S. Wright

*Associate Professors*  
M. Parris  
R.A. Shigeishi  
R.H. Wightman

*Assistant Professors*  
P.H. Buist  
R.J. Crutchley  
E.P.C. Lai

*Adjunct Professors*  
O.E. Edwards, *National Research Council*  
R. Greenhalgh, *Agriculture Canada*  
L.V. Haley, *Department of Chemistry, Carleton University*  
J.M. Holmes, *Department of Chemistry, Carleton University*  
M. Malaiyandi, *Health and Welfare Canada*  
H.H. Mantsch, *National Research Council*  
S.A. Narang, *National Research Council*  
I.E. Puddington, *National Research Council (Ret.)*  
J.J. Sloan, *National Research Council*  
I.C.P. Smith, *National Research Council*

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## General Information

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Students intending to enter a program in Chemistry should have a strong background in mathematics and physics as well as in chemistry. The three-year Major and four-year Honours programs in Chemistry are described below. Students interested in continuing their careers in secondary school teaching, graduate studies or as professional chemists are advised to enrol in the Honours program.

A Combined Honours program in Chemistry and Geology is available as described below.

While Combined Honours in Chemistry and Mathematics or Chemistry and Physics are not formally available, strong continuation groupings in Mathematics and/or Physics can be arranged under the Honours Chemistry program. Secondary specialization in Biology can be arranged under the Honours Chemistry program, or under the joint program in Honours Biochemistry. In evaluating students for entry with advanced standing, the Department of Chemistry transfers credits but not grades.

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## Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 332-333), in addition to all departmental regulations and requirements as set out below.

The Department of Chemistry includes all Chemistry courses taken in calculating Honours standing.

The designation of Honours degree awarded for students in the Combined Honours program is determined on the basis of their grade-point average for all required credits in the two Major subjects as specified in the respective program requirements.

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## Major Program

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A total of ten credits is required for graduation after completion of the First-year Science faculty requirements. This program must be completed before continuation into Second year and must include Chemistry 65.100, Mathematics 69.107★, 69.117★, Physics 75.100 and one other First-year Science credit.

The total program (including First year) must contain:

1. Chemistry 65.100, 65.210, 65.220, 65.230 and two credits at the 300 level including Chemistry 65.311★, 65.353★ and at least one of 65.315★, 65.325★ or 65.355★.
2. Mathematics 69.107★, 69.117★ and 69.202 or approved equivalents;
3. Physics 75.100, 75.235★ and 75.236★ or approved equivalents;
4. A First-year Science credit (as required in the First-year program);
5. Two Arts or Social Science credits (see Faculty of Science regulations);
6. One Science credit or other approved credit chosen after consultation with the Department of Chemistry;
7. One free credit.

In addition to the Faculty requirement of a C- average in chemistry, the department also requires a grade of C- or better in at least half of all Chemistry courses taken.

It is recommended that candidates choose a course in French, German or Russian as one of their Arts credits.

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## Honours Program

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A total of 15 credits is required for the degree after completion of First-year Science requirements. These requirements are the same as for the Major program except that, based on the results of an assessment test and permission of the Chairman of the Department, outstanding students may be allowed to take Chemistry 65.220 in the First year instead of Chemistry 65.100. However, the total number of credits required will remain unchanged. In addition to the Faculty requirement of a C+ average in Chemistry, the Department also requires a grade of C+ or better in at least half of all Chemistry courses taken.

The total program (including First year) must contain:

1. Chemistry 65.100, 65.210, 65.220, 65.230, 65.311★, 65.321★, 65.353★, 65.354★, 65.315★, 65.325★, 65.355★,

one credit at the 400 level in Chemistry, one half credit at the 300 or 400 level in Chemistry; and Chemistry 65.498.

2. Mathematics 69.107★, 69.117★ and 69.202 or approved equivalents;

3. Physics 75.100, 75.235★ and 75.236★ or approved equivalents;

4. A First-year Science credit (as required in the First-year program);

5. Two Arts or Social Science credits (see Faculty of Science regulations);

6. Two Science or other approved credits.

7. One free credit.

Each candidate for Honours is required to demonstrate a reading knowledge of one of scientific French, German or Russian.

### Honours Project

All Honours candidates are required, as part of Chemistry 65.498, in the final year to carry out a substantial project and to write a report to their supervisor. Towards the end of the Third year, prospective candidates should obtain pertinent information from the departmental office. A brief progress report is to be presented to the supervisor and committee members before January 15. The deadline for submission of the final typed report is the first Monday in April. Honours students are also expected to attend departmental seminars in their specialty. The report and its defence are heavily weighted in determining the class of Honours awarded. The grade of *In Progress* will be restricted to unusual circumstances and be subject to approval by the Department.

### Combined Honours in Chemistry and Geology

*Program Advisers:* C.L. Chakrabarti (Chairman) and K. Bell

A total of 15 credits is required for the degree after completion of the First-year science requirements. The First-year program must include Chemistry 65.100, Geology 67.100, Mathematics 69.107★ and 69.117★, and Physics 75.100.

The total program (including First year) must contain:

1. Chemistry 65.100, 65.210, 65.230, 65.353★, 65.354★ and one Chemistry credit at the 400 level.

2. Geology 67.100, 67.221★, 67.222★, 67.228★, 67.281★, 67.323★, 67.324★ and one Geology credit at the 400 level;

3. Either Chemistry 65.498 or Geology 67.498. Students should consult their program adviser about selection of this in their Third year;

4. One Chemistry or Geology credit;

5. Mathematics 69.107★, 69.117★ and 69.202;

6. Physics 75.100;

7. Two Science credits, of which one must be outside Chemistry and Geology;

8. Two Arts or Social Science credits;

9. One free credit.

A language requirement must be met during the Third year by passing a course in, or demonstrating reading proficiency in one of French, German or Russian.

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## Graduate Program

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The Department of Chemistry offers studies leading to the degree of Master of Science and to the degree of Doctor of Philosophy. For further details consult the Graduate Studies and Research Calendar.

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## Courses Offered

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### Chemistry 65.010

#### Introductory Chemistry

An introductory course emphasizing the fundamental laws and principles of chemistry. Accurate working of numerical problems forms an important part of the course. The laboratory course is designed to teach fundamental techniques and to give familiarity with some physical and chemical properties of a selected group of substances. Day division: Lectures three hours a week, laboratory three hours a week.

### Chemistry 65.100

#### General Chemistry

Solution equilibria, acid and base chemistry; electronic structure of atoms; energy states and spectra; descriptive chemistry and periodic properties of the elements; the structure of covalent and ionic substances; energy relationships and theories in bonding, equilibria, and rates of reactions. The laboratory course gives training in fundamental techniques and methods of experimental work in analysis, synthesis and other aspects of chemistry.

Precludes additional credit for Chemistry 65.111★.

Prerequisites: Chemistry 65.010 and Mathematics 69.006★ and 69.007★, or equivalent. This course is intended for students in all programs who plan to take further chemistry courses.

Day division: Lectures three hours a week, laboratory three hours a week.

### Chemistry 65.107

#### The Chemistry of Art and Artifacts

A non-mathematical course designed for archaeologists and historians dealing with the deterioration and preservation of artifacts and works of art. This course treats: the nature and reactions of chemical substances such as stone, metal, wood, and painting materials; modern methods of studying materials and their deterioration; methods of arresting deterioration. Guest lectures and visits to local laboratories and other sites will be arranged. Not offered 1986-87.

### Chemistry 65.111★

#### Chemistry for Engineering Students

This First-year course is designed to familiarize students with chemical principles applicable to engineering problems. Topics such as atomic structure, the periodic system, ions and valence are treated, as are chemical crystallography, the properties of metals, semiconductors and insulators, and the properties of electrolytic solutions. This course is not a prerequisite for further chemistry courses. Individual students wishing to take further chemistry courses will, however, be considered on their merits. Precludes additional credit for Chemistry 65.100.

Prerequisites: Chemistry 65.010, Mathematics 69.006★ and 69.007★, or equivalents.

Day division, Both terms: Lectures three hours a week, laboratory three hours a week.



## Chemistry 65.210

**Physical Chemistry**

An introduction to thermodynamics and its application to problems of phase equilibria, chemical equilibria, surface chemistry and electrochemistry. Principles of chemical dynamics and their application to analysis of reaction mechanisms.

Prerequisites: Chemistry 65.100 and Mathematics 69.107★ and 69.117★ or equivalent.

Day division: Lectures three hours a week, problems one hour a week, laboratory three hours a week.

## Chemistry 65.220

**Organic Chemistry**

Structure, synthesis and reactions of the main functional groups using both aliphatic and aromatic examples and emphasizing a mechanistic approach. Elementary stereochemistry. Biologically and industrially important molecules are used as examples whenever possible. The laboratory includes transformations and characterization of selected functional groups as well as introductory spectroscopy.

Precludes additional credit for Chemistry 65.222.

Prerequisite: Chemistry 65.100.

Day division: Lectures three hours a week, laboratory four hours a week.

## Chemistry 65.222

**Organic Chemistry**

A course for non-Chemistry Majors. An introduction to organic chemistry paralleling Chemistry 65.220 but with an introduction to, and emphasis on, the chemistry of biologically important compounds. Laboratory similar to Chemistry 65.220.

Precludes additional credit for Chemistry 65.200.

Prerequisite: Chemistry 65.100.

Day division: Lectures three hours a week, laboratory four hours a week.

## Chemistry 65.230

**Analytical Chemistry**

Introduction to analytical chemistry. Understanding of principles and methods of chemical analyses. Knowledge of instruments and their applications. Data treatment. Evaluation and interpretation of results. Solving chemical problems. General knowledge of why certain analyses are done. Qualitative identification and quantitative determination of both atomic and molecular species. The laboratory provides hands-on experience and training of techniques.

Prerequisites: Chemistry 65.100, Mathematics 69.107★ and 69.117★ or equivalent.

Day division: Lectures three hours a week, laboratory four hours a week.

## Chemistry 65.231★ (65.251★)

**Analytical Chemistry**

A half-credit course for non-chemistry Majors on the theory and practice of gravimetric, titrimetric and instrumental analysis. Emphasis is placed on experimental techniques required for analysis of biological and environmental samples.

Precludes additional credit for Chemistry 65.251★, no longer offered.

Day division, Fall term: Lectures and problems three hours a week, laboratory four hours a week.

## Chemistry 65.310

**Physical Chemistry**

An introduction to quantum mechanics and its use in explaining atomic and molecular structure and spectra;

introduction to statistical mechanics and its application to simple systems; theories of chemical kinetics with applications.

Precludes additional credit for Chemistry 65.311★.

Prerequisites: Chemistry 65.210, Mathematics 69.202 or equivalent.

Day division: Lectures and problems four hours a week.

To be cancelled in 1987-88.

## Chemistry 65.311★

**Quantum Chemistry**

Introduction to quantum theory, with emphasis on chemical applications. Wave functions, energy states, atomic orbitals, origins of chemical bonding, vibrational and electronic spectra, hybridization and molecular structure, symmetry, Hückel theory of conjugated molecules.

Prerequisites: Chemistry 65.210, Mathematics 69.202, or equivalent.

Day division, Fall term: Lectures and problems three hours a week.

## Chemistry 65.312★

**Quantum Chemistry**

Further developments in quantum chemistry and applications to atomic and molecular structure and spectroscopy. Topics include the hydrogen ion molecule, molecular orbitals, diatomic and polyatomic molecules, term symbols, extended Hückel theory selection rules for vibrational, rotational and electronic spectra.

Prerequisite: Chemistry 65.311★.

Day division, Winter term: Lectures and problems three hours a week.

To be introduced in 1987-88.

## Chemistry 65.315★

**Experimental Physical Chemistry**

A laboratory-based course designed to acquaint students with advanced concepts in physical chemistry and the use of more advanced physico-chemical techniques in other areas of chemistry. Students are responsible for literature surveys, acquisition of theoretical background, design of experimental procedures and mathematical analysis of data.

Prerequisites: Chemistry 65.210 and at least one of 65.220 or 65.250. Prerequisite or co-requisite: Chemistry 65.310 or 65.311★.

Day division, Both terms: Laboratory and seminars five hours a week.

## Chemistry 65.320

**Organic Chemistry**

Molecular rearrangements and other organic reactions not previously studied. Synthetic sequences. Mechanisms with emphasis on reactive intermediates. Structure elucidation and stereochemistry using instrumental methods. Use of the literature of organic chemistry. Topics selected from: heterocyclic compounds, natural products, polymers, newer synthetic methods, phosphorus and sulfur compounds, photochemistry, structure reactivity relationships.

Prerequisite: Chemistry 65.220 or 65.222.

Day division: Lectures three hours a week.

To be cancelled in 1987-88.

## Chemistry 65.321★

**Organic Chemistry I**

Instrumental methods for the determination of structure. Intermediates in organic reactions. Organic stereochemistry. The literature of organic chemistry.

Prerequisite: Chemistry 65.220 or 65.222.

Day division, Fall term: Lectures three hours a week.

Chemistry 65.322★

**Organic Chemistry II**

A more intensive study of additional organic reactions with emphasis on mechanism, stereochemistry and synthetic sequences. Selected topics including instrumental methods, heterocyclic compounds, natural products, photochemistry, polymers and natural products.

Prerequisite: Chemistry 65.321★ or permission of the Department.

Day division, Winter term: Lectures three hours a week.

To be introduced in 1987-1988.

Chemistry 65.325★

**Experimental Organic Chemistry**

A laboratory-based course including advanced concepts and techniques in organic synthesis, structure determination, and the rates and mechanisms of reactions. Students are responsible for literature surveys, acquisition of theoretical background, and design of experimental procedures.

Prerequisite: Chemistry 65.220 or 65.222. Prerequisite or co-requisite: Chemistry 65.320, 65.321★ or Biochemistry 63.300 or permission of the Department.

Day division, Both terms: Laboratory and seminars five hours a week.

Chemistry 65.350

**Inorganic Chemistry**

Valence theory, the periodic system, chemistry of the transition metals: role of d orbitals, preferred oxidation states, periodic variation in ionic size, redox equilibria. Chemistry of co-ordination compounds: nomenclature, isomerism, stability constants, bonding and kinetics. Chemistry of organometallic compounds. Structure of metals, semi-conductors and non-stoichiometric compounds. Introduction to radiochemistry.

Prerequisites: Chemistry 65.210, 65.250.

Day division: Lectures three hours a week.

To be cancelled in 1987-88.

Chemistry 65.351★

**Inorganic Chemistry**

Valence theory, the periodic system, chemistry of the transition metals: role of d orbitals, preferred oxidation states, periodic variation in ionic size, redox equilibria. Chemistry of co-ordination compounds: nomenclature, isomerism, stability constants, bonding and kinetics.

Prerequisites: Chemistry 65.210, 65.250.

Day division, Fall term: Lectures three hours a week.

To be cancelled in 1987-88.

Chemistry 65.353★

**Inorganic Chemistry I**

An introduction to quantum theory and atomic structure. The periodic system, chemistry of the p-block, transition and lanthanide elements. Symmetry and chemical bonds. Structure and energetics.

Prerequisites: Chemistry 65.210, 65.230.

Day division, Fall term: Lectures three hours a week.

To be introduced in 1987-88.

Chemistry 65.354★

**Inorganic Chemistry II**

The electronic structure of molecules. Topics to be chosen from: chemistry of co-ordination compounds; nomenclature, isomerism, stability constants, bonding, thermodynamics and kinetics, chemistry of organometallic compounds, bioinorganic chemistry — the role of transition metals in nature.

Prerequisite: Chemistry 65.353★.

Day division, Winter term: Lectures three hours a week.

To be introduced in 1987-88.

Chemistry 65.355★

**Experimental Inorganic and Analytical Chemistry**

A laboratory-based course including advanced concepts and techniques in inorganic synthesis, structure determination and analytical chemistry. Students are responsible for literature surveys, acquisition of theoretical background, design of experimental procedures and mathematical analysis of data.

Prerequisite: Chemistry 65.210 and 65.250.

Prerequisite or co-requisite: Chemistry 65.350, 65.351★ or permission of the Department.

Day division, Both terms: Laboratory five hours a week.

Chemistry 65.370★

**Industrial Applications of Chemistry**

A course reviewing, relating and extending the material of prerequisite chemistry courses through studies of problems in applied chemistry and introducing concepts necessary for conversion of laboratory processes to the industrial scale. The course covers several topics designed to illustrate a wide range of applications in as many areas of chemistry as possible.

Prerequisites: Chemistry 65.210, and one of Chemistry 65.220, 65.222 or 65.250.

Given in alternate years with Chemistry 65.372★.

Not offered 1986-87.

Chemistry 65.372★

**Transport Processes and Unit Operations**

A course introducing chemists to some more common problems of interest to chemical engineers: fluid flow; steady and unsteady-state heat transfer; mass transfer; gas-liquid, liquid-liquid and solid-liquid separation processes.

Prerequisite: Chemistry 65.210 or permission of the Department.

Given in alternate years with Chemistry 65.370★.

Chemistry 65.410★

**Quantum Chemistry**

Group theory applied to the determination of hybrid orbitals, molecular orbitals and molecular vibrations. Symmetry analysis of spectra, selection rules, allowed and forbidden reactions.

Prerequisite: Chemistry 65.310 or 65.311★ or Physics 75.362★ or permission of the Department.

Day division, Fall term: Lectures and seminars three hours a week.

Chemistry 65.411★

**Advanced Calculations in Physical Chemistry**

A course reviewing and extending the concepts covered in Chemistry 65.210 and 65.310 by applying them to more advanced, practically oriented problems. The emphasis is on problems involving thermodynamics and statistical mechanics.

Prerequisite: Chemistry 65.310 or permission of the Department.

Day division, Fall term: Lectures and seminars three hours a week.

Chemistry 65.412★

**Chemical Kinetics**

Complex reaction sequences, numerical solution of kinetic equations. Descriptive kinetics, including photochemical reactions, chain reactions, explosions, feedback loops. Homogeneous and heterogeneous catalysis. Theoretical kinetics, including collision dynamics, activated



complex theory, kinetics in solution.

Prerequisite: Chemistry 65.310 or permission of the Department.

Day division, Winter term: Lectures and seminars three hours a week.

Chemistry 65.413★

#### **Colloid and Surface Chemistry**

Properties and stability of colloidal systems, theories of adsorption, heterogeneous catalysis, and interfacial phenomena.

Prerequisite: Chemistry 65.210 or permission of the Department.

Day division, Winter term: Lectures and seminars three hours a week.

Chemistry 65.420★

#### **Physical Organic Chemistry**

Molecular orbital calculations. Woodward-Hoffmann rules. Experimental and theoretical methods for determining reaction mechanisms. Linear free energy relationships. Mechanism problem-solving.

Prerequisites: Chemistry 65.320 or 65.321★ and 65.310 or 65.311★ or permission of the Department.

Day division, Fall term: Lectures and discussions three hours a week.

Chemistry 65.422★

#### **Instrumental Analysis of Organic Compounds**

Methods of analysis for, and structure determination of complex organic molecules. Topics include trace analysis of organics via mass spectrometry, Fourier transform infrared and  $^{13}\text{C}$  NMR spectroscopy, ultra violet spectroscopy, mass spectrometry and methods for relative and absolute stereochemical determination.

Prerequisite: Chemistry 65.320 or 65.321★ or permission of the Department.

Day division, Fall term: Lectures and seminars three hours a week.

Chemistry 65.423★

#### **Synthetic Organic Chemistry**

The application of reactions to the synthesis of organic molecules. Emphasis on design of sequences, new reagents and stereoselectivity.

Prerequisite: Chemistry 65.320 or permission of the Department.

Chemistry 65.430★

#### **Electroanalytical Chemistry**

Properties of ionic solutions, electrode processes, theory and application of electroanalytical techniques and reactions.

Prerequisites: Chemistry 65.250 and 65.310 or permission of the Department.

Day division, Fall term: Lectures and seminars three hours a week.

Chemistry 65.431★

#### **Trace and Ultratrace Analytical Chemistry**

Sampling and sample preservation. The problems of the blank. Trace and ultratrace analysis. Analysis of ultrapure material. Atomic absorption, atomic fluorescence and atomic and molecular emission spectroscopy. Simultaneous and sequential multi-element analysis.

Prerequisites: Chemistry 65.210 and 65.250 or permission of the Department.

Not offered 1986-87.

Chemistry 65.432★

#### **Solutions and Separations in Analytical Chemistry**

Complex formation, multi-step and competing equilibria and their application to the design of selective methods of separation and determination. Electroanalytical chemistry of aqueous solutions. Phase equilibria and solvent extraction.

Prerequisites: Chemistry 65.210 and 65.250 or permission of the Department.

Text: Laitinen and Harris, *Chemical Analysis, Second Edition*.

Day division, Winter term: Lectures and seminars three hours a week.

Chemistry 65.450★

#### **Applications of Ligand Field Theory**

Introduction to quantitative crystal field theory; the weak field approximation and application to heats of ligation; the strong field approximation and application to spectra and magnetism of inorganic compounds.

Prerequisites: Chemistry 65.310 and 65.350.

Day division, Fall term: Lectures and seminars three hours a week.

Chemistry 65.451★

#### **Thermodynamic and Kinetic Aspects of Inorganic Chemistry**

The course treats topics in solid state chemistry, and solution chemistry. Applications in metallurgy and mineralogy receive attention.

Prerequisites: Chemistry 65.210 and 65.350 or 65.351★ or permission of the Department.

Chemistry 65.452★

#### **Radiochemistry**

A study of nuclear stability and decay; chemical studies of nuclear phenomena. Selected laboratory experiments are optional.

Prerequisites: Chemistry 65.210 and 65.350 or 65.351★, or permission of the Department.

Reference text: Friedlander, Kennedy, Macias and Miller, *Nuclear and Radiochemistry*.

Day division, Fall term: Lectures and seminars three hours a week.

Chemistry 65.498

#### **Research Project and Seminar**

Senior students in Honours chemistry carry out a research project under the direction of one of the members of the Department. A written report and an oral presentation of the work are required before a grade can be assigned.

Day division, Annually: Laboratory and associated work at least eight hours a week.

#### **Courses Planned for Summer School 1987**

65.100

# Geography

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## Officers of Instruction

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*Chairman*  
A.I. Wallace

*Supervisor of Honours Studies*  
J.K. Torrance

*Professors*  
J.P. Johnson, Jr.  
J.K. Torrance  
P.J. Williams

*Associate Professors*  
M.W. Smith  
T.P. Wilkinson

*Assistant Professor*  
M.F. Fox

*Geotechnical Science Laboratories*  
L. Boyle  
A. Pendlington

*Adjunct Professors*  
R.O. Ramseier  
D. Monahan

*Sessional Lecturers*  
R. Defoe  
A. Rencz

*Laboratory Demonstrator*  
D. Patterson

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## General Information

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The Department of Geography, Faculty of Social Sciences, offers a full range of B.A. programs, in addition to the B.Sc. Honours programs described here. For details consult the Department's main entry in this calendar, beginning on p. 153.

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## Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 332-333), in addition to all departmental regulations and requirements as set out below.

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## Honours Programs

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### B.Sc. in Physical Geography

The Bachelor of Science Honours program in Physical Geography is designed to give the student an understanding of the earth's surface as man's physical environment. The student will specialize in the study of properties and processes of the earth's surface materials and atmosphere.

### Program Requirements

The program consists of 20 credits beyond Senior Matriculation or Qualifying-University-year Science, selected in

a pattern approved by the Supervisor of Honours Studies in the Geography Department, and consistent with the following requirements.

1. The First year of the program will be consistent with Faculty of Science requirements for First-year Science. (Note that Physics 75.100 or 75.105 is required in Second year if not taken in First year.)

2. The program will contain eight credits in Geography at or beyond the 200 level, including the Honours Research Project, Geography 45.496 which should be taken in the final year, and seven credits selected from the list below, of which at least two must be at the 300 level and at least two at the 400 level. These should include Geography 45.210★, 45.211★, 45.299★, 45.308, 45.311★, 45.312★ and 45.345★. In special cases students may take an appropriate graduate course in their final year, with permission of the Supervisor of Graduate Studies.

3. The remaining seven credits must include:

(a) two approved credits in Science, not in Geography, beyond the 100 level; (Geology 67.233★ and 67.281★ are recommended);

(b) two approved credits in Science, Computer Science or Engineering;

(c) two Arts or Social Science elective credits, one of which must be an approved credit not in Geography;

(d) one free elective credit.

### Physical Geography Courses

- 45.200★ Elements of Graphic and Cartographic Design
- 45.201★ Statistical Methods in Geography
- 45.202★ Air Photo Interpretation and Remote Sensing
- 45.210★ The Physical Environment
- 45.211★ Geomorphology and Environmental Management
- 45.299★ Introduction to Field Techniques
- 45.303★ Quantitative Geography
- 45.308 Geography of Soils
- 45.311★ Environmental Monitoring
- 45.312★ Geomorphology
- 45.324★ Cartographic Theory and Design
- 45.325★ Cartographic Production
- 45.326★ Computer-Assisted Cartography
- 45.345★ Physical Climatology and Climatic Change
- 45.400★ Field Studies
- 45.402★ Problems in Physical Geography
- 45.403★ Remote Sensing of the Environment
- 45.404★ Environmental Impact Assessment
- 45.405★ Problems of Environmental Impact Assessment
- 45.411★ Quaternary Geography
- 45.412★ Terrain Analysis
- 45.413★ Hydrology
- 45.414★ Microclimatology
- 45.415★ Slope Development: Forms, Processes and Stability
- 45.418★ Selected Topics in Physical Geography
- 45.424★ Introductory Soil Mechanics and Engineering Geology

### Note:

Credit for Geography 45.201★ is precluded if credit for Mathematics 69.257★ or an introductory statistical analysis course in the social sciences has already been obtained.



**Recommended Program Sequence**

A recommended program is:

*First Year*

Mathematics 69.107★ and 69.117★;

Geology 67.100;

Two of: Geography 45.210★ with 45.211★; or Biology 61.100; or Chemistry 65.100; or Physics 75.100; Arts or Social Science elective (may not be Geography 45.101, if 45.210★ with 45.211★ is selected.)

*Second Year*

Geography 45.200★, 45.202★, 45.299★;

One of: Geography 45.210★ with 45.211★; 45.308; 45.345★; with an additional half credit from preceding list of approved Physical Geography courses;

Mathematics 69.257★;

Science elective or Physics 75.100 or 75.105 (required course in Second year if not taken in First year);

Arts or Social Science elective.

*Third Year*

Geography 45.311★ or 45.312★;

Either Geography 45.308; or 45.345★ with an additional half credit from the preceding list of approved Physical Geography courses;

One 400-level Geography credit;

One Science Continuation credit;

Arts or Social Science elective.

*Fourth Year*

Three 400-level Geography credits (including Geography 45.496);

One Science Continuation credit;

Free option.

*Notes:*

A Human Geography course is recommended as one of the Arts or Social Science electives.

**Combined Honours B.Sc. in Biology and Physical Geography**

Students desiring a comprehensive basic education in both Biology and Physical Geography may apply for a Combined Honours B.Sc. program. Applicants must satisfy entry requirements of the Honours B.Sc. program. Course requirements of the Combined Honours B.Sc. program are as follows:

1. Biology 61.100 (or 61.101), Mathematics 69.107★ and 69.117★, Chemistry 65.100 and one of Geology 67.100 or Physics 75.100 or 75.105. Physics must be taken in this program or Grade 13 Physics must be presented as an entrance credit.

2. Two optional credits which are acceptable courses offered by the Faculties of Arts or Social Sciences. A credit in Geography other than the Physical Geography courses listed on p. 156, such as Geography 45.101, is recommended.

3. One additional Science credit from the list on p. 330 (Geology 67.100 or Physics 75.100 or 75.105 are recommended).

4. One free option credit.

5. Ten credits in Biology (or Biochemistry) and Physical Geography (see courses listed on p. 156) beyond First-year level, including at least one half credit involving a field course. Not more than six credits in this group should be taken in one department and not more than six may be at the 200 level.

6. One additional credit in Science or Computer Science above the 100 level, not in Biology or Geography, and chosen in consultation with the student's program adviser.

7. Biology 61.498 or Geography 45.496.

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**Graduate Program**

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The Department of Geography offers graduate programs in Physical Geography and Geotechnical Science. For further details consult the Graduate Studies and Research Calendar.

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**Courses Offered**

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Full details of all individual course offerings are presented in the Department of Geography submission in the Faculties of Arts and Social Sciences section of the Calendar, p. 153.

# Department of Geology

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## Officers of Instruction

---

### *Chairman*

R.L. Brown

### *Associate Chairman*

G.Y. Chao

### *Professor Emeritus*

F.K. North

### *Professors*

K. Bell

R.L. Brown

G.Y. Chao

J.A. Donaldson

P.A. Hill

J.M. Moore, Jr.

G. Ranalli

G.B. Skippen

W.M. Tupper

D.H. Watkinson

R.W. Yole

### *Associate Professor*

K. Hooper

### *Assistant Professors*

J. Blenkinsop

F.A. Michel

R.P. Taylor

### *Adjunct Professors*

J.M. Franklin, *Geological Survey of Canada*

E. Froese, *Geological Survey of Canada*

I. Jonasson, *Geological Survey of Canada*

J. Kukalova-Peck, *Department of Geology, Carleton University*

M.B. Lambert, *Geological Survey of Canada*

### *Sessional Lecturers*

To be announced

### *Instructors*

J.G. MacDonald

I. Munro

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## Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 332-333), in addition to all departmental regulations and requirements as set out below.

The designation of the Honours degree awarded for students in the Honours Geology program will be determined on the basis of their grade-point average for the ten and a half required credits of Geology as stated in the program requirements.

The designation of the Honours degree awarded for students in the Combined Honours programs will be determined on the basis of their grade-point average for all required credits in the two major subjects as stated in the respective program requirements.

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## Major Program

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The B.Sc. program in Geology is of *four* years duration beyond Senior Matriculation or Qualifying University year. A total of 20 credits is required as follows:

1. The credit requirements of the First year of the general B.Sc. program (p. 329).

2. At least ten and a half credits in Geology, of which Geology 67.100, 67.221★, 67.222★, 67.228★, 67.233★, 67.234★, 67.281★, 67.282★, 67.323★, 67.324★, 67.333★, 67.334★ and 67.380 (or 67.381★ and 67.382★) are mandatory. (Geology 67.100 may be taken either in Qualifying University or First year.)

Students who have taken Geology 67.101 and attained a grade of *B-* or better may substitute, with permission of the Department, Geology 67.101 for 67.100.

3. At least six credits in the other sciences above Qualifying-University-year level. Among these, Mathematics 69.107★ and 69.117★, Chemistry 65.100, and one of Biology 61.100 or 61.101 or Physics 75.100, or 75.105 are mandatory. At least three First-year Science credits must be passed before registration for Second-year Geology courses will be permitted, except that, if Geology 67.100 has been taken in Qualifying University year, a Second-year Geology credit may be substituted.

4. Two approved credits in Arts and/or Social Sciences.

5. One and a half credits chosen from Science, Arts, Social Sciences or Engineering.

A three-year program for students not intending to become professional geologists is also available. Requirements are the same as for the B.Sc. program outlined above except that Geology 67.282★ is not mandatory, no courses above the 300 series are required, and the total credits will number 15, including seven Geology credits; at least five Science credits outside of Geology, which must include Mathematics 69.107★ and 69.117★, Chemistry 65.100 and one credit from Biology 61.100 or 61.101 or Physics 75.100 or 75.105; two Arts or Social Science credits and one optional credit.

A typical program is as follows:

### *First Year*

Geology 67.100\*;

Chemistry 65.100;

Physics 75.100 or 75.105 or Biology 61.100 or 61.101;

Mathematics 69.107★, and 69.117★;

One elective credit (Arts or Social Science).

(\*May be replaced by another Science credit if taken in Qualifying University year.)

### *Second Year*

Geology 67.221★, 67.222★, 67.228★, 67.233★, 67.234★, 67.281★ and 67.282★;

One First- or Second-year Science credit;

One-half elective credit (Arts or Social Science).

### *Third Year*

Geology 67.323★, 67.324★, 67.333★, 67.334★ and 67.380 (or 67.381★ and 67.382★);

One Second-year Science credit;

One-half elective credit (Arts, Social Science, Science or Engineering).

One-half elective credit (Arts or Social Science).

### *Fourth Year*

Three Geology credits at the 400 level;

One Second-year Science credit;

One elective credit (Arts, Social Science, Science or Engineering).



**Notes:**

1. A working knowledge of elementary biology is required for Geology 67.234★ and 67.333★. This requirement may be fulfilled by credit for Grade 13 Biology, Biology 61.100, or 61.101, or by arrangement with the instructor for extra reading assignments in Geology 67.234★.

2. All Major and Honours students should note that their selection of Science courses, including Mathematics, should be made with the prerequisites for subsequent Geology courses in mind.

3. Many Fourth-year courses are given in alternate years only. Fourth-year courses offered in the Department of Geology, University of Ottawa, are scheduled to alternate with those given at Carleton University. In 1986-87, some of the following Geology half credits, of which two may be taken for credit at Carleton, will be offered:

**Geology**

- 4307 Permafrost Geomorphology
- 4310 Paleoecology
- 4330 Structural Geology II
- 4331 Tectonics
- 4344 Advanced Igneous Petrogenesis
- 4345 Metamorphic Petrology II
- 4350 Geochemistry I
- 4351 Geochemistry II
- 4360 Sedimentology I
- 4361 Sedimentology II
- 4370 Advanced Mineral Deposits
- 4390 Precambrian Geology

4. Third-year students possessing prerequisites may be admitted to Fourth-year courses with the permission of the Department.

5. Enrolment in 200-level courses may be restricted due to limited physical resources.

**Honours Program**

Faculty requirements concerning Honours standing must be maintained. (See pp. 330-333.)

**Honours in Geology**

1. Courses as prescribed for the Major program are required, except that Geology 67.498 (Thesis) is one of the mandatory credits in Geology, and a credit in Mathematics beyond First-year level, and/or Computer Science is mandatory in the group of six credits required in other sciences. The Department recommends that students take Mathematics 69.257★ and Computer Science 95.103★ in order to fulfil this requirement.

2. The departmental language requirement must be met before completion of the Third year by passing a minimum of a formal half credit (e.g. French 20.106★) in, or demonstrating reading proficiency in, a language other than English, that is acceptable to the Department.

**Combined Honours in Biology and Geology**

Program advisers are K. Hooper and H.F. Howden.

Students desiring a comprehensive basic training in both biology and geology may apply for admission to a Combined Honours program, on completion of the First year of the Science program. Applicants must be of Honours standing and must have achieved grades of C+ or better in both Biology 61.100 and Geology 67.100.

Course requirements of the Combined Honours program are as follows:

1. Biology 61.100†, Geology 67.100, Mathematics 69.107★ and 69.117★. Chemistry 65.100 or Physics 75.100. (The course omitted, i.e. chemistry or physics, must have been passed at Grade 13 level.);

2. Ten credits in Biology (or Biochemistry) and Geology beyond First-year level, including at least one course involving a field camp. Not more than six credits in this group should be taken in one department and not more than six credits may be 200-level courses;

3. Biology 61.498 or Geology 67.498;

4. One half credit in Statistics and one half credit in Computer Science. (Mathematics 69.257★ and Computer Science 95.103★ are recommended);

5. Three optional credits, at least two of which must be Arts or Social Science electives;

6. A Science elective credit;

7. A language requirement must be met during the Third year by passing a course in, or demonstrating reading proficiency in, one of French, German, Russian, Spanish, Italian, Latin, Greek or any language acceptable to the committee and in which suitable arrangements can be made for the examination.

†See *Notes on Programs*, p. 339

**Combined Honours in Chemistry and Geology**

Program advisers are C.L. Chakrabarti and K. Bell.

A grade of C+ or better in both Chemistry 65.100 and Geology 67.100 and overall Honours standing are required for admittance to the program. Program requirements are as follows:

**First Year**

Chemistry 65.100;  
Geology 67.100;  
Mathematics 69.107★ and 69.117★;  
Physics 75.100;  
One elective credit (Arts or Social Science).

**Second Year**

Chemistry 65.210 and 65.250;  
Geology 67.221★, 67.222★, 67.228★ and 67.281★;  
Mathematics 69.202.

**Third Year**

Chemistry 65.350;  
Geology 67.323★ and 67.324★;  
One Chemistry or Geology credit;  
One Science elective credit;  
One Arts or Social Science elective credit.

**Fourth Year**

Chemistry 65.498 or Geology 67.498;  
One Chemistry credit at the 400 level;  
One Geology credit at the 400 level;  
One Science elective credit;  
One open elective credit.

A language requirement must be met during the Third year by passing a course in, or demonstrating reading proficiency in, one of French, German or Russian.

**Combined Honours in Physics and Geology**

Program advisers are M.K. Sundaresan and J. Blenkinsop.

A grade of C+ or better in both Geology 67.100 and Physics 75.100 and overall Honours standing are required for admittance to the program. Program requirements are as follows:

First Year

Physics 75.100;  
Geology 67.100;  
Mathematics 69.107★ and 69.117★;  
Chemistry 65.100;  
One Arts or Social Science elective credit.

Second Year

Physics 75.211★, 75.222★, 75.235★ and 75.236★;  
Geology 67.221★, 67.222★, 67.228★ and 67.281★;  
Mathematics 69.202.

Third and Fourth Years

Three credits in Physics (not including the Honours Thesis), which must include one credit in the Third-year laboratory and at least a half credit at the 400 level;  
Three credits in Geology (not including the Honours Thesis) chosen from Geology 67.323★, 67.324★, 67.333★, 67.334★, 67.381★, 67.382★ and available Fourth-year courses. At least a half credit at the 400 level is required for which Geology 67.481★ is strongly recommended. (Students should carefully take note of course pre-requisites when making their selection.);  
Two optional credits (one credit in Computer Science is recommended);  
One Arts or Social Science credit;  
Honours Thesis (Physics 75.499 or Geology 67.498).

A reading proficiency in French, German or Russian must be demonstrated by the end of the Third year. The thesis must be presented and defended before an inter-departmental committee.

Combined Honours in Statistics and Geology

Program advisers are J.E. Graham and F.A. Michel.

Designed for students of Honours standing desiring a comprehensive training in geostatistics, that is, the applications of statistical methods and techniques to geological problems. Program requirements are as follows:

First Year

Mathematics 69.102 and 69.117★;  
Geology 67.100;  
Chemistry 65.100; and one of Biology 61.100 (or 61.101),

Physics 75.100 (or 75.105);  
Computer Science 95.103★ (or 95.105★).

Second Year

Mathematics 69.208★, 69.217★, 69.257★, 69.259★;  
Geology 67.221★, 67.222★, 67.228★, 67.233★, 67.281★;  
One half credit free option (or Computer Science 95.106★, if 95.105★ was taken in First year).

Third and Fourth Years

Mathematics 69.244★, 69.350, 70.355★, 70.452★, 70.453★, and one half credit from: 69.304★, 69.381★, 69.386★.

Two of the following three blocks:

- (a) Geology 67.323★, 67.324★;
  - (b) Geology 67.381★, 67.382★;
  - (c) Geology 67.234★, and either 67.333★ or 67.334★.
- One and a half credits in Geology at the 400 level.  
Geology 67.498 Honours Thesis, or Mathematics 70.495★ Honours Project; and one additional half credit in Mathematics or Statistics at the 300 level or above.  
Two credits (Arts or Social Science).

Graduate Courses

For information on graduate courses, please consult the Graduate Studies and Research Calendar.

Work-Study Program in Geology

This program allows students to gain professional experience while completing an academic degree. Admission to the program requires departmental approval and is based on academic standing after completion of the Second-year core program. Applications should be made in January of the Second year. The Department will assist students in locating jobs that are related to career opportunities in geology but the Department cannot guarantee that such jobs will be available. The program is governed by the same academic regulations as regular B.Sc. programs in Geology. A typical program for the

Year Term	III	IV	V
Spring	Work Period I	Work Period II	Work Period III
Fall		67.323★ 67.333★ 67.381★ 67.382★ Three Geology half credits at the 400 level. Two full-credit electives.	
Winter	67.324★ 67.334★ One Geology half credit at the 400 level Two half-credit electives (Science, Arts or Social Science)		67.498 or two 400-level half credits two additional Geology half credits at the 400 level one half-credit elective

Program Adviser: F. Michel



Third and subsequent years is shown in the table. Combined-Honours students should consult the appropriate advisers for their program in work-study.

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### Courses Offered

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#### Geology 67.100

##### **Principles of Geology**

The structure of the Earth's interior and tectonic processes; rocks, minerals and Earth resources; history of the Earth and its life. This course is designed for prospective Geology Majors and Science and Engineering students, but may be taken by students in other programs. Precludes additional credit for Geology 67.101.

Day division: Lecture two hours a week, laboratory three hours a week, two field excursions.

#### Geology 67.101

##### **General Geology**

A survey of processes operating within the Earth and at its surface; Earth structure, tectonics, rocks, minerals, resources and history of life on the Earth. This course is designed for students interested in a broad introduction to the science of geology.

Precludes additional credit for Geology 67.100.

Evening division: Lectures two hours a week, laboratory three hours a week, one half-day field excursion.

Students who have taken Geology 67.101 and attained a grade of B- or better may substitute, with permission of the Department, Geology 67.101 for 67.100.

#### Geology 67.221★

##### **Crystallography and Optical Mineralogy**

Morphological study and classification of crystals; principles of optical crystallography.

Prerequisites: Geology 67.100 and Chemistry 65.100, or permission of the Department. Students who have taken Geology 67.101 and attained a grade of B- or better may substitute, with permission of the Department, Geology 67.101 for 67.100.

Day division, Fall term: Lectures two hours a week, tutorial one hour a week, laboratory three hours a week.

#### Geology 67.222★

##### **Mineralogy**

Introduction to crystal chemistry, X-ray techniques, physical mineralogy and systematic mineralogy.

Prerequisite: Geology 67.221★.

Day division, Winter term: Lectures two hours a week, tutorial one hour a week, laboratory three hours a week.

#### Geology 67.228★

##### **Petrography and Geochemistry of Igneous Rocks**

Introduction to the origin and classification of igneous rocks. Optical properties of the rock-forming minerals. Petrographic techniques and principles of geochemistry. Prerequisite: Geology 67.221★.

Day division, Winter term: Lectures two hours a week, tutorial one hour a week, laboratory three hours a week.

#### Geology 67.233★

##### **Sedimentology and Stratigraphy I**

Principles of stratigraphy and sedimentology, petrography of sedimentary rocks. One or more field excursions.

Prerequisite: Geology 67.100 or permission of the Department. Students who have taken Geology 67.101 and attained a grade of B- or better may substitute, with permission of the Department, Geology 67.101 for 67.100.

Day division: Lectures two hours a week, laboratory three hours a week.

#### Geology 67.234★

##### **Palaeontology I**

Principles of palaeontology and palaeoecology; organic evolution of invertebrates and vertebrates; human palaeontology.

Prerequisite: Geology 67.100 or permission of the Department. Students who have taken Geology 67.101 and attained a grade of B- or better may substitute, with permission of the Department, Geology 67.101 for 67.100. Day division: Lectures two hours a week, laboratory three hours a week.

#### Geology 67.281★

##### **Field Geology I**

Basic geological methods applied to the field study of rocks. A mandatory two-week field camp before classes. Cost of long-distance transportation and room and board relating to the field camp are borne by the student.

Prerequisite: Geology 67.100. Students who have taken Geology 67.101 and attained a grade of B- or better may substitute, with permission of the Department, Geology 67.101 for 67.100.

Day division, Fall term: Field camp, plus six two-hour follow-up laboratories.

#### Geology 67.282★

##### **Field Geology II**

An introduction to methods of field analysis and interpretation in deformed and metamorphosed terranes. The course includes a two-week field camp to be taken in early May. Cost of long-distance transportation and room and board relating to the field camp are borne by the student.

Prerequisite: Geology 67.281★.

Day division, Winter term: Lectures one hour a week, laboratory three hours a week, two-week field camp in early May.

#### Geology 67.323★

##### **Metamorphic Petrography and Petrology**

Petrology of volcanic and metamorphic rocks; one day-long field trip.

Prerequisites: Geology 67.221★, 67.222★, 67.228★ and Chemistry 65.100.

Day division, Fall term: Lectures two hours a week, laboratory three hours a week.

#### Geology 67.324★

##### **Mineral Deposits**

Ore deposits, economic geology, applied geochemistry and groundwater geology. One day-long field trip.

Prerequisites: Geology 67.221★, 67.222★, 67.228★ and Chemistry 65.100.

Day division, Winter term: Lectures two hours a week, laboratory three hours a week.

#### Geology 67.333★

##### **Stratigraphic Palaeoecology**

Principles of ecology and palaeoecology applied to the stratigraphic succession of fossil communities: evolutionary palaeoecology.

Prerequisite: Geology 67.234★ or permission of the Department.

Day division, Fall term: Lectures two hours a week, tutorial one hour a week, laboratory three hours a week.

Geology 67.334★

**Sedimentology and Stratigraphy II**

Stratigraphic analysis; sedimentary environments; sedimentary tectonics; systematic historical geology of North America.

Prerequisite: Geology 67.233★.

Day division, Winter term: Lectures two hours a week, laboratory three hours a week.

Geology 67.380

**Structural Geology and Geodynamics**

The geometry of the Earth's crust interpreted in the light of mechanical principles of deformation; rock mechanics; applications to geological mapping, exploration and resource development. The structure and composition of the interior of the Earth: lithosphere, mantle and core. Rheological properties of lithosphere and mantle. Plate tectonics: kinematics and dynamics.

Precludes additional credit for Geology 67.381★ and 67.382★.

Prerequisites: Geology 67.221★, 67.222★, 67.228★, 67.281★, 67.282★, or permission of the Department.

Day division: Lectures two hours a week, laboratory three hours a week.

Geology 67.381★

**Structural Geology**

The geometry of the Earth's crust interpreted in the light of mechanical principles of deformation; rock mechanics; applications to geological mapping, exploration and resource development. May not be taken by Geology Honours and Geology Major students, except those in the Work Study program.

Precludes additional credit for Geology 67.380.

Prerequisites: Geology 67.221★, 67.222★, 67.228★, 67.281★.

Day division, Fall term: Lectures two hours a week, laboratory three hours a week.

Geology 67.382★

**Geodynamics**

The structure and composition of the interior of the Earth: lithosphere, mantle and core. Rheological properties of lithosphere and mantle. Plate tectonics: kinematics and dynamics. May not be taken by Geology Honours and Geology Major students, except those in the Work Study program.

Precludes additional credit for Geology 67.380.

Prerequisite: Geology 67.381★ or permission of the Department.

Day division, Winter term: Lectures two hours a week, laboratory three hours a week.

Geology 67.383★

**Gemmology**

Gem identification, occurrence, genesis, synthesis and evaluation. Testing instruments and techniques. Crystallographic, optical, physical and chemical properties of gemstones.

Prerequisites: Geology 67.221★ and 67.222★ or permission of the Department. Open to Science students with permission of their department, but not as a Science Continuation course.

Evening division, Winter term: Lectures and laboratories, five hours a week.

Geology 67.403★

**Directed Studies in Geology**

One or more special projects based on a total of at least 15 days field research, laboratory investigations, or some combination of these components. Credit for field com-

ponents may be accrued during the Third year of a student's program, but laboratory projects will be arranged during the Fourth year. Assessment to be based on written reports and oral examinations. Travel expenses for any long-distance travel are to be borne by student.

Prerequisites: Honours standing and permission of the Department.

Day division, Fall or Winter term.

Geology 67.415★

**Quaternary Geography**

Offered in the Department of Geography as Geography 45.411★.

Lectures three hours a week, one term only.

Geology 67.417★

**Engineering Soil Mechanics and Engineering Geology**

Offered in the Department of Civil Engineering as Engineering 82.328★. (Also listed as Geography 45.424★.)

Geology 67.419★

**Hydrology**

Offered in the Department of Civil Engineering as Engineering 82.441★. (Also listed as Geography 45.413★.)

Lectures two hours a week, problems, analyses three hours alternate weeks.

Geology 67.420★

**Hydrogeology**

The principles governing the movement of groundwater through various geologic settings and the processes controlling chemical quality are examined. Study of the development and use of groundwater as a resource by man and the subsequent effects on water quality.

Prerequisites: Geology 67.233★, Chemistry 65.100 or permission of the Department.

Day division: Lectures, seminars and laboratories five hours a week.

Geology 67.421★

**Ore Mineralogy**

Structural principles, crystal chemistry and classification of ore-forming oxides, sulfides, sulfosalts, uranium and precious-metal minerals. Principles of ore microscopy, analytical and identification techniques.

Prerequisite: Geology 67.324★.

Geology 67.422★

**Metallic Mineral Deposits**

Ore deposits studied from their relationships to the petrologic cycle. Ore genesis interpreted in light of field studies of local deposits, reflected light microscopy of ore suites, description of classic deposits, phase equilibria and isotopic evidence.

Prerequisites: Geology 67.323★ and 67.324★.

Day division: Lectures, seminars and laboratories five hours a week.

Geology 67.423★

**Petroleum Geology**

Occurrence and nature of petroleum; principles of petroleum geology; exploration and production, and evaluation methods; examples of oil and gas fields with emphasis on Canadian occurrences.

Prerequisite: Geology 67.334★.

Day division: Lectures, seminars and laboratories five hours a week.

Geology 67.427★

**The Geology and Application of Coal**

The origin, structure, petrography and terminology of



coal. Coal fields of North America with special reference to Canada. The evaluation, analysis, testing and application of coals. Extraction, utilization and beneficiation. Pollution. Economics.

Prerequisite: Geology 67.334★ or permission of the Department.

Evening division.

#### Geology 67.428★

##### **Property Valuation and Mineral Economics**

Sampling, ore calculations, drilling and mining methods, property valuation, economics of specific mineral industries, national and international trade and mineral policies, taxation and financing of the mineral industry.

Prerequisite: Geology 67.324★ or permission of the Department.

#### Geology 67.431★

##### **Marine Geology and Microfossils**

Oceanological and marine geological processes; micro-organisms of the oceans; microfossils: their evolution, biostratigraphic and palaeoecologic significance and economic use; microfaunal correlation in petroleum geology. Laboratory: Examination and identification of microfossils. Each student is required to present at least one seminar paper.

Prerequisite: Geology 67.234★ or permission of the Department.

Day division: Lectures and laboratories five hours a week.

#### Geology 67.442★

##### **Advanced Structure**

A study of the structural evolution of mountain belts, with emphasis on field methods.

Prerequisite: Geology 67.380, or 67.381★ and 67.382★, or permission of the Department.

Day division: Lectures, seminars and laboratories five hours a week.

#### Geology 67.451★

##### **Igneous Petrology**

Genesis of plutonic and volcanic rocks, their spatial and petrochemical relationships and crust-mantle differentiation; associated problems in phase equilibria and isotopic studies. One day-long field trip.

Prerequisite: Geology 67.323★.

Day division: Lectures and laboratories five hours a week.

#### Geology 67.452★

##### **Metamorphic Petrology**

Field relations of metamorphic rocks; graphical treatment and interpretation of mineral assemblages. Laboratory: Petrographic techniques, study of rock suites.

Prerequisite: Geology 67.323★.

#### Geology 67.463★

##### **Sedimentology**

Review of sedimentary processes. Composition, texture, primary structure and origin of the major sedimentary rock types; dispersal patterns, sedimentary trends and lithofacies. Laboratory: textural analyses, heavy minerals, statistical analysis of data, and thin-section petrography.

Prerequisite: Geology 67.323★ or 67.334★.

Day division.

#### Geology 67.464★

##### **Precambrian Geology**

Introduction to problems of the Precambrian, emphasizing both classical and current North American studies. Lab-

oratory: research methods, field trips, petrologic studies of representative rock suites.

Prerequisite: Geology 67.323★.

#### Geology 67.481★

##### **Physics of the Earth**

The physical properties of the solid earth. Gravitational, magnetic and palaeomagnetic fields; seismology and earthquake occurrence; heat flow and thermal history. Geodynamic processes.

Prerequisite: Geology 67.380, or 67.381★ and 67.382★, or permission of the Department.

#### Geology 67.482★

##### **Geochemistry and Isotope Geology**

Chemical evolution of the earth, meteorites, development of the continental crust, origin of the atmosphere and hydrosphere, radiometric dating, stable isotopes, origin of life.

Prerequisites: Geology 67.323★ and 67.324★ or permission of the Department.

Day division: Lectures and seminars five hours a week.

#### Geology 67.483★

##### **Applied Geochemistry**

Chemical and physical factors responsible for the distribution and migration of the elements in the lithosphere, hydrosphere, atmosphere and biosphere; geochemistry applied to mineral exploration; methods of analysis. Laboratory: determination of trace amounts of the common metallic elements in soils and stream sediments; case histories, research problems, field trips.

Prerequisites: Geology 67.228★, 67.324★, Chemistry 65.100; or permission of the Department.

Day division.

#### Geology 67.484★

##### **Exploration Geophysics**

An introduction to the fundamental theory and application of geophysics to economic and structural geology. Methods studied are electrical, gravitational, magnetic, radioactive and seismic. Case history studies integrate the application of the methods.

Prerequisites: Geology 67.324★, 67.334★, Physics 75.100 or 75.105; or permission of the Department.

Day division: Lectures and problems three hours a week.

#### Geology 67.487★

##### **Field Geology II**

A two-week field camp designed to develop the student's ability to observe, analyze and interpret geological field data in the light of theoretical and experimental knowledge. Written reports, including maps, sections and diagrams, are submitted during the course. Near Calabogie and Kaladar, Grenville Province, May.

Prerequisite: Completion of the geology core program or its equivalent.

#### Geology 67.498

##### **Honours Thesis**

The B.Sc. thesis is to be based on a study undertaken before or during the final University year, in the field and/or the Department. Before registering in the course, the student must first have obtained approval of the topic from a supervisor and the course co-ordinator. The thesis is equivalent to one credit, with an average of eight hours work per week. It shall be defended orally; a final draft suitable for defence shall normally be submitted to the co-ordinator by the deadline for Winter term assignments.

# Integrated Science Studies

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## Members of the Committee

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### Chairman

G.R. Carmody (*Biology*)  
575 Tory Building, 564-2851

### Committee

J.B. Kelly (*Psychology*)  
B.R. Lifeso, *Registrar, Faculty of Science*  
L.E. May (*Mathematics*)  
S.B. Peck (*Biology*)  
G.B. Skippen (*Geology*)

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## General Information

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The Integrated Science Studies Program affords students the opportunity to earn a Science degree in an integrated field of interest not available through the standard programs offered by departments in the Faculty of Science. The Integrated Science Studies Committee arranges programs for those students who wish to develop an understanding of science and at the same time to develop an area of interest in the humanities, social sciences or engineering.

The programs require that students go into an area of mathematics, physical sciences, environmental sciences, behavioural sciences or life sciences to sufficient depth to have an understanding of its workings and significance. In the parallel studies outside the Faculty of Science, patterns of courses must be selected that give the student similar understanding. A unique program for each student is developed individually in consultation with the advisers of the Committee who will continue to supervise the progress of the student. An Honours program of Integrated Science Studies is available under the supervision of the committee. Further information may be obtained from the Chairman.

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## Admission Requirements

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Application for admission to the program is made on an application form available from the Office of the Science Registrar. The admission requirements for these programs are those specified for the B.Sc. Major (p. 328) and B.Sc. Honours (p. 328) degrees. Before seeking formal admission to the program, students are advised to consult with the Chairman for assistance in formulating an application proposal and a coherent set of courses that will meet the objectives of the student and fulfil Calendar requirements.

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## Course Requirements

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### First Year

The First-year program consists of five credits approved for a First-year Science program including:

- (a) Mathematics 69.107★ and 69.117★;
- (b) Two experimental Science credits chosen from two of: Biology, Chemistry, Geology, Physics;
- (c) Two additional credits chosen from Science, Mathematics, Arts, Social Sciences, Computer Science (except Computer Science 95.100★ or 95.101★) or Engineering.

In establishing their First-year program, students should consult with the Chairman of the Integrated Science Studies program or a member of the committee to ensure that they register for appropriate courses.

### Major Program

Although programs are planned and approved on an individual basis, the general framework of regulations is specified. The program, under the direction of the Integrated Science Studies Committee, consists of 15 credits, ten beyond First year including:

1. Six credits selected from the Faculty of Science above the 100 level, including Integrated Science 60.399★; two of the science credits must be at the 300 or 400 level; the foregoing credits are designated as the Science sequence;

2. Three credits in an inter-related specialized area selected from outside the Faculty of Science; these credits are designated as the Non-Science sequence.

At least two credits must be chosen from the Faculties of Arts or Social Sciences.

At least eight credits must be at the 200 or higher level. In this program, all Technology, Society, Environment Studies courses are considered non-Science credits.

### Honours Program

The program, under the direction of the Integrated Science Studies Committee, consists of 20 credits, 15 beyond First year including:

1. Nine credits selected from the Faculty of Science above the 100 level, including Integrated Science 60.498; four of the Science credits must be at the 300 or 400 level; the foregoing courses are designated as the Science sequence;

2. Four credits in an inter-related specialized area selected from outside the Faculty of Science; these credits are designated as the Non-Science sequence.

At least two credits must be chosen from the Faculties of Arts or Social Sciences.

At least eight credits must be at the 200 or higher level. In this program, all Technology, Society, Environment Studies courses are considered Non-Science credits.

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## Graduation

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 332-333), in addition to all Committee regulations and requirements as set out below.

### Major Program

To qualify for graduation a student must satisfy the normal requirements of the Faculty and have grade-point averages of 4.0 or better in the Science sequence (six credits), the Non-Science sequence (three credits), and overall (15 credits). The last five credits taken should include at least one credit from each of the Science and Non-Science sequences.

The general Faculty of Science regulations apply for graduating "with Distinction" (see p. 332).



### **Honours Program**

To qualify for graduation a student must satisfy the normal requirements of the Faculty and have grade-point averages of 6.5 or better in both the Science Sequence (nine credits) and the Non-Science sequence (four credits) as well as an overall grade-point average of 5.0 or better (20 credits). The class of Honours degree will be determined following general Faculty regulations (p. 000) using all 13 credits in the Science and non-Science sequences to calculate the Honours grade-point average.

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### **Courses Offered**

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Integrated Science 60.399★

#### **Independent Study**

The student must have the agreement of a member of the University faculty to supervise the project. The student is responsible for filing an outline of the proposed project (which includes an indication of the methods to be used, and which has been written in consultation with the adviser), with the Integrated Science Studies Chairman not later than three weeks after registration in the course. A final report must be prepared and submitted in two copies, one to the project adviser and one to the Chairman of the committee, by the last day of classes of the term in which the student is registered. This course is normally open only to integrated science studies students. Students in other programs must demonstrate the integrative or interdisciplinary nature of their proposed study. Prerequisite or co-requisite: At least one half-credit at the 300 level or better and permission of the Committee. Fall and Winter terms.

Integrated Science 60.498

#### **Honours Project**

A project is carried out by the student in consultation with a faculty adviser. The project must be approved by the adviser's department and by the Chairman of the Integrated Science Studies program. A written outline of the proposed study, approved by the adviser, must be submitted to the Chairman of the Committee not later than three weeks after registration in the course. A progress report must be submitted to the adviser and the Chairman by the first day of classes in the Winter term. Three copies of the final written report shall be prepared and submitted by the last day of Winter term classes, one each for the project adviser, an Integrated Science Studies Committee member, and a third reader, who has some familiarity with the project area. An oral report will normally be required at the conclusion of the project. The project is the equivalent of one credit, with an average of eight hours of work per week. An "In Progress" grade will not be given for work not meeting the deadlines except in unusual circumstances and with the approval of the Committee Chairman. The fulfilment of these requirements is the responsibility of the student.

# Interdisciplinary Courses

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## Humanities

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### Humanities 10.100

An examination of selected works, from Biblical times to the present, illustrating the various dominant views on the nature of humanity and attempts to understand people and their environment.

Prerequisite: First-year standing or higher.

Not offered 1986-87.

### Humanities 10.200★

An examination of selected works illustrating various dominant views on the nature of humanity and attempts to understand the world in the context of the twentieth century as seen from points of view of history, philosophy, social science and literature.

Prerequisite: Second-year standing or higher.

Not offered 1986-87.

Offered Summer 1986.

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## Arts and Social Sciences

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### Arts and Social Sciences 04.288

#### **Introduction to Women's Studies**

A survey course, designed to increase the student's understanding of the position of women in contemporary society. The course offers an introduction to such issues as biological and cultural sex differentiation, women and literature, women and religious institutions, women and politics, women and social and health services and women and the law. A brief introduction to the intellectual and social origins of feminism and a survey of women's place in Western European history provides a context for examining women's position in contemporary society. Evening division: Lectures and discussion three hours a week.

### Arts and Social Sciences 04.390

#### **The Literature of Existentialism**

A study of the origins, development, and principal characteristics of existentialist literature. (Also listed as English 18.390.)

All assigned readings will be in English.

Prerequisite: Permission of the Department of English.

Day division: Lectures two hours a week.

*B.W. Jones*

### Arts and Social Sciences 04.395

#### **Visual and Performing Arts in the Twentieth Century**

This interdisciplinary course is designed to examine selected aspects of the creation, distribution and reception of the arts in this century. The focus of the course is on the interplay of aesthetics, ideology and technology in music, theatre, film, art and architecture.

Prerequisite: Third-year standing and permission of the Fine Arts Committee (see p. 396).

### Arts and Social Sciences 04.491★

#### **Selected Topics in Women's Studies I**

Selected problems in the field of women's studies, not ordinarily treated in other course programs.

Prerequisite: Permission of the Interfaculty Committee on Women's Studies.

Seminar three hours a week.

### Arts and Social Sciences 04.492★

#### **Selected Topics in Women's Studies II**

Selected problems in the field of women's studies, not

ordinarily treated in other course programs.

Prerequisite: Permission of the Interfaculty Committee on Women's Studies.

Seminar three hours a week.

### Arts and Social Sciences 04.498

#### **Honours Essay**

A required interdisciplinary research essay for Honours students in the Fourth year of Directed Interdisciplinary Studies. The project is carried out by the student in consultation with a faculty supervisor. The project must be approved in advance by the Committee on Directed Interdisciplinary Studies; students must consult with the Program Co-ordinator in selecting a project and a supervisor. At least one week before the last day for course changes, students must submit to the Program Co-ordinator a written outline of the proposed study, approved by the supervisor. Arts and Social Sciences regulations governing Honours Theses and Research Essays apply to this project, which is equivalent to one credit.

Registration in this course is limited to students in the Fourth year of the B.A. (D.I.S.) Honours program.

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## Science

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### Science 60.100

#### **Man in His Environment**

This course is designed to acquaint students in Arts, Social Sciences and Engineering, with the methodology of science in approaching a problem. The historical aspects of scientific discoveries are examined, particularly those that influence present society. A special emphasis is directed to the interactions of science and society and to man's influence and impact on the natural environment.

Not offered 1986-87.

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## Technology, Society, Environment Studies

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Our society increasingly faces problems requiring communication among specialists of different disciplines. This is at least in part a result of increasing specialization of people and jobs. The multidisciplinary problems raised by the interaction of an industrial society with its environment, its resource base, and its complex technical systems are addressed by five courses organized by the Technology, Society, Environment Committee. These courses develop the multidisciplinary perspective through problem units on topics including energy, the industrial revolution, pollution, transportation, political regulation of technology, forecasting of technological and social change, technological innovation and the arms race. Each course involves team projects that bring together students working in different disciplines. The five courses are Technology, Society, Environment 59.300, 59.401★, 59.402★, 59.403★ and 59.404★. They are described on pp. 403-404.



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**Other Courses**

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African Studies, see p. 394.  
Asian Studies, see p. 395.  
Fine Arts, see p. 396.  
Integrated Science Studies, see p. 397.  
Labour Studies, see p. 400.  
Medieval Studies, see p. 402.  
Urban Studies, see p. 405.  
Women's Studies, see p. 406.

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**Directed Interdisciplinary Studies, B.A.**

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For information about the B.A. Directed Interdisciplinary Studies program see p. 122.

# Department of Mathematics and Statistics

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## Officers of Instruction

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### *Chairman*

B.M. Puttaswamaiah

### *Associate Director, Institute for Graduate Studies and Research in Mathematics and Statistics*

To be announced

### *Undergraduate Adviser*

K. Small

### *Professor Emeritus*

M.S. Macphail

### *Professors*

M. Chacron

M. Csörgö

W.H. Cunningham

D.K. Dale

D.A. Dawson

J.D. Dixon

V. Dlab

C.W.L. Garner

J.E. Graham

E.O. Kreyszig

L.D. Nel

J.N. Pandey

M. Rahman

J.N.K. Rao

L. Ribes

A.K. Md. Ehsanes Saleh

H. Schirmer

W.J. Schneider

K.S. Williams

### *Associate Professors*

K. Hardy

R.M. Herz-Fischler

A.B.M.L. Kabir

L.E. May

M.J. Moore

B.C. Mortimer

E.J. Norminton

J.C. Poland

I.S. Pressman

B.M. Puttaswamaiah

A. Smith

P.C. Tan

G.K. Zelmer

### *Assistant Professors*

A. Bose

M. J. MacLeod

S.E. Mills

B. Nassrallah

### *Natural Sciences and Engineering Research Council Research Fellow*

B.C. Mortimer

### *Research Consultant in Computer Science*

M.D. Atkinson

### *Research Consultant in Statistical Computing*

D.R. Thomas

### *Adjunct Professors*

F.P. Agterberg (*Energy, Mines and Resources Canada*)

T. Hida (*Nagoya University, Japan*)

D. Krewski (*Health and Welfare Canada*)

P. Mandl

P. Révész (*Academy of Sciences, Hungary*)

D.W. Sida

M.B. Wilk (*Chief Statistician, Statistics Canada*)

### *Sessional Lecturers*

S. Bleuer

M. Hurd

P. Mandl

### *Departmental Administrator*

S. Dahabieh

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## Programs in Mathematics and Statistics

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The Department of Mathematics and Statistics offers a wide variety of programs ranging from those giving a strong training in the theoretical aspects of mathematics and statistics to those which emphasize applications to industry and government.

The Department offers both Major and Honours programs leading to either the B.A. or the B.Sc. degree. The following is a list and short description of the programs which are available:

### **Mathematics (Major and Honours B.A. and B.Sc.)**

The Major programs are generally less theoretical than the Honours programs which may form an excellent introduction to graduate studies. The main areas of concentration are: algebra, analysis, topology, applied mathematics (classical and modern), statistics and probability.

### **Computer Mathematics (Major and Honours B.A. and B.Sc.)**

The programs in computer mathematics are designed to provide a student with a background of computer-related mathematical ideas together with a firm base of computer science. These programs may be of interest to students who are preparing for careers in government, industry, management, or systems analysis.

### **Statistics (Honours B.A. and B.Sc.)**

This program leads to an Honours B.A. or B.Sc. degree and is designed primarily for a student who wishes to prepare for a career as a professional statistician.

The following combined Honours programs may be of particular interest:

### **Economics and Mathematics (Honours B.A.)**

### **Mathematics and Philosophy (Honours B.A.)**

### **Computer Science and Mathematics (Honours B.Sc.)**

The Combined Honours program in Computer Science and Mathematics is a limited-enrolment program resembling the Bachelor of Computer Science program, placing equal emphasis on computer science and mathematics. There are two options available for concentration, namely:

Computing Theory and Numerical Methods  
Statistics and Computing

### **Geology and Statistics (Honours B.Sc.)**



**Mathematics and Physics (Double Honours B.Sc.)****Operations Research (Honours B.A. and B.Sc.)**

This program is devoted to the professional discipline which deals with the scientific aspects of planning and decision-making. (See pp. 211 and 379.)

**Graduation Regulations**

In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (Arts and Social Sciences, see p. 90; Science, see pp. 332-333) in addition to all departmental regulations and requirements as set out below.

*Note:***For students in Honours programs:**

The designation of Honours degree will be determined by the student's grade-point average on all required credits in the Honours subjects, as stated in the program requirements; however, the Department may use discretion in counting the number of Honours credits, where students have more than the minimum number of required credits.

**For students in the Combined Honours programs:**

The designation of Honours degree will be determined by the student's grade-point average on all required credits in the two Honours subjects, as stated in the respective program requirements; however, the departments may use discretion in counting the number of Honours credits, where students have more than the minimum number of required credits.

**For students in the Double Honours program in Mathematics and Physics:**

The designation of Honours degree will be determined by the grade-point average on all required credits in the two Honours subjects, as stated in the program requirements.

**First-Year Course Selection**

1. Mathematics 69.102, 69.112 (students in the Faculties of Arts, Social Sciences or Science). This choice is required of students in First year who are in a mathematics program;
2. Fall term: Mathematics 69.104★; Winter term: Mathematics 69.114★ (students in the Faculty of Engineering);
3. Fall term: Mathematics 69.107★; Winter term: Mathematics 69.117★ (students in the Faculty of Science);
4. Fall term: Mathematics 69.109★; Winter term: Mathematics 69.119★ (students in the School of Business, Department of Economics or in other Arts or Social Sciences departments);
5. Fall term: Mathematics 69.107★, 69.117★; Winter term: Mathematics 69.207★, 69.217★ (students in the Faculties of Arts, Social Sciences or Science);
6. Mathematics 69.102; Fall term: Mathematics 69.117★ (students in the Faculty of Science or the School of Computer Science).

*Note:*

Credit will only be given for one of: Mathematics 69.102, 69.104★, 69.107★, 69.109★; and one of: Mathematics 69.112, 69.114★, 69.117★, 69.119★, 69.127★ (no longer offered).

In the prerequisites listed for more advanced courses Mathematics 69.107★ may be replaced by "69.109★ with directed reading" and 69.117★ may be replaced by "69.119★ with directed reading."

**Major Programs: B.A. and B.Sc.****Core Requirements**

The requirements given below are common to all Major programs in the Department of Mathematics and Statistics.

In certain cases the Department may permit a student to replace courses listed in the 69 series by the corresponding Honours (70 series) courses.

Each Major program requires a total of 15 credits, including:

- Mathematics 69.102, 69.112 with an average grade of C- or better.

Alternatively, students may be admitted to a Major program in Mathematics after successful completion of First year with:

- (a) a minimum grade-point average of 5.0 (C) on all half credits offered from: Mathematics 69.107★, 69.207★, 69.117★, 69.217★; and
- (b) a minimum weighted grade-point average of 4.0 (C-) on all courses offered from: Mathematics 69.102, 69.107★, 69.207★, 69.112, 69.117★, 69.217★.

*Note:*

Students offering Mathematics 69.107★ must then take Mathematics 69.207★, and students offering Mathematics 69.117★ must then take Mathematics 69.217★.

## ■ For the B.A. Program:

Two credits at the 200 level or above in the Faculties of Arts or Social Sciences.

## ■ For the B.Sc. Program:

Two Science Continuation credits are required (in addition to the First-year experimental science requirement). Certain Computer Science courses required in specific programs may be counted towards this requirement. Acceptable courses and exceptions are noted on p. 330.

Two Arts or Social Science elective credits. Concerning Social Science electives, see the note on p. 330.

- In each program, the remaining courses may be chosen from any department, including Mathematics and Statistics, subject only to the restriction that of the total of 15 credits not more than seven may be below the 200 level.

**Course requirements for Major programs:****Mathematics (Major B.A. and B.Sc.)**

This program requires a minimum of seven credits in mathematics.

Course requirements for this program are:

1. core requirements (see above);
2. Mathematics 69.208★, 69.218★, 69.244★, 69.257★;
3. three credits in Mathematics selected from the range 69.304★ to 69.389★, excluding 69.352★, 69.375★ and 69.376★.

With permission of the Department, one or more of the courses in requirement 3 may be replaced by a course in

the 70 series at the 300 or 400 level, provided that of the total of three credits, not more than two are in the same area.

**Note:**

Students wishing to specialize in *Applied Analysis* may, with the permission of the Department, replace requirements 2 and 3 in the Mathematics degree requirements by:

2. Mathematics 69.208★, 69.244★, 69.257★;
3. Mathematics 69.304★, 69.307★, and one of Mathematics 69.344★, 69.381★, 69.386★, or Physics 75.381★;
4. one additional credit in Mathematics at the 300 level;
5. one additional credit at the 200 or 300 level chosen from Mathematics or Computer Science.

Students wishing to specialize in *Statistics* may, with the permission of the Department, replace requirements 2 and 3 in the Mathematics degree requirements by:

2. Mathematics 69.208★, 69.257★, 69.259★;
3. Mathematics 69.350, 69.351;
4. one half-credit in Mathematics at the 300 level;
5. one additional credit at the 200 or 300 level chosen from Mathematics or Computer Science.

Students specializing in *Applied Analysis* or *Statistics* are encouraged to include at least one and a half credits in Computer Science in their programs.

**Computer Mathematics (Major B.A. and B.Sc.)**

This program requires a minimum of ten credits in Mathematics and Computer Science. Computer Science 95.100★ and 95.101★ are not acceptable in this program, even as free options.

Course requirements for this program are:

1. core requirements (see p. 364);
2. Computer Science 95.102★, 95.105★, 95.106★, 95.202★;
3. Mathematics 69.208★, 69.218★, 69.257★;
4. Mathematics 69.384★, 70.385★, and at least one of Mathematics 69.381★, 69.386★;
5. one additional credit in Mathematics at the 300 level;
6. one additional credit in Computer Science (95 series) at the 200 level or above;
7. one additional credit at the 200 or 300 level in Mathematics or Computer Science.

**Note:**

In special cases Computer Science 95.103★ (or 95.104★, no longer offered) may replace 95.105★, although only one of 95.103★, 95.104★ or 95.105★ can be counted for credit in the Computer Mathematics program.

**Combined Major Programs: B.A.**

In general, the Mathematics requirements are the same as those listed under the Mathematics Major B.A. program (see p. 365), except that only two credits are required instead of three under regulation 3.

Programs are arranged in consultation with the Department of Mathematics and Statistics and another department in the Faculties of Arts or Social Sciences.

**Honours Programs: B.A. and B.Sc.**

**Core Requirements**

Prospective Honours students should note that the courses Mathematics 69.102, 69.112, 70.200 and 70.210 provide more than just the basic mathematical techniques; they also provide training in rigorous mathematical thinking and, as such, are basic to the Honours mathematics programs.

The core requirements for the Honours programs in Mathematics, Computer Mathematics, and Statistics, are as given below.

In certain cases the Department may permit a student to replace a course at the Fourth-year level by a graduate course.

Each Honours program requires a total of 20 credits including:

- Mathematics 69.102, 69.112 with an average grade of C+ or better.

Alternatively, students may be admitted to an Honours program in Mathematics after successful completion of First year with:

- (a) a minimum grade-point average of 7.0 (B-) on all half credits offered from: Mathematics 69.107★, 69.207★, 69.117★, 69.217★; and
- (b) a minimum weighted grade-point average of 6.0 (C+) on all credits offered from: Mathematics 69.102, 69.107★, 69.207★, 69.112, 69.117★, 69.217★.

**Notes:**

- (a) Students offering Mathematics 69.107★ must then take Mathematics 69.207★, and students offering Mathematics 69.117★ must then take Mathematics 69.217★.
- (b) Knowledge of a computer language is required for Mathematics 70.260.

- Mathematics 70.200, 70.210, 70.260.

■ Mathematics 70.495★ (Honours Project). The Honours Project in Mathematics consists of a written report on some approved topic or topics in the field of Mathematics together with a short lecture on the report. Each student should commence work on the project under a faculty supervisor before June 1 of the year before he or she intends to graduate (for full-time students, this would be the June 1 between Third and Fourth Year.) The first draft of the report must be submitted to the supervisor by November 1, and the final draft to the Department by January 15. Students who do not meet this latter deadline will be given the grade Abs.

- For the B.A. program:

Two credits at the 200 level or above in the Faculties of Arts or Social Sciences.

- For the B.Sc. program:

Two Science Continuation credits are required (in addition to the First-year experimental science requirement). Certain Computer Science courses required in specific programs may be counted towards this requirement. Acceptable courses and exceptions are noted on p. 330.

Two Arts or Social Science elective credits. Concerning Social Science electives, see the note on p. 330.

- In each program, the remaining courses may be chosen from any department, including Mathematics and Statistics, subject only to the restriction that of the total of 20 credits, not more than seven may be below the 200 level.



**Course Requirements for Honours Programs:****Mathematics (Honours B.A. and B.Sc.)**

This program requires a minimum of 11 credits in Mathematics.

Course requirements for this program are:

1. core requirements (see p. 366);
2. Mathematics 70.301★, 70.302★, 70.307★, 70.310;
3. three additional half credits in Mathematics (70 series) at the 300 level or above;
4. three additional half credits in Mathematics (70 series) at the 400 level or above.

**Note:**

It is strongly recommended that both Mathematics 70.301★ and 70.302★ be taken in the Third year.

Students wishing to specialize in *Applied Analysis* may, with permission of the department, replace items 2, 3, and 4 in the Mathematics degree requirements by:

2. Mathematics 70.302★, 70.307★, 70.308★, 70.346★, 70.356★, and 1.0 credit from Mathematics 69.381★, 69.384★, 69.386★, and Honours courses in Mathematics (70 series) at the 300 level or above;
3. Mathematics 70.470★, at least one of 70.471★, 70.472★, and one additional half credit in Mathematics at the 400 level;
4. one additional half credit, chosen from Computer Science (95 series, 200 level or above) or from Mathematics (70 series, at the 300 level or above).

Students wishing to specialize in *Stochastics* may, with permission of the department, replace items 2, 3 and 4 in the Mathematics degree requirements by:

2. Mathematics 70.302★, 70.308★, 70.350, 70.356★ and one of 70.355★, 69.381★;
3. Mathematics 70.451★, and one half credit selected from the range 70.450★ to 70.459★;
4. one credit in Mathematics at the 400 level or above;
5. one additional half credit chosen from Computer Science (95 series, 200 level or above) or from Mathematics (70 series or 69.384★, 69.386★).

Students specializing in *Applied Analysis* or *Stochastics* are encouraged to include at least one and a half credits in Computer Science in their programs.

**Computer Mathematics (Honours B.A. and B.Sc.)**

This program requires a minimum of 14 credits in Mathematics and Computer Science. Computer Science 95.100★ and 95.101★ are not acceptable in this program, even as free options.

Course requirements for this program are:

1. core requirements (see p. 366);
2. Computer Science 95.102★, 95.105★, 95.106★, 95.202★;
3. Mathematics 70.301★, 69.384★;
4. Mathematics 70.310, or Mathematics 70.385★ and 69.381★;
5. one credit from Mathematics 69.304★, 69.381★, 69.386★ and courses in the range Mathematics 70.302★ and above;
6. Mathematics 70.350, or Mathematics 69.257★ and 70.356★;

7. Mathematics 70.484★, 70.486★;

8. one half credit from Mathematics 70.482★, 70.483★, 70.485★, 70.488★, or an approved half credit at the graduate level (70.580 series);

9. one additional credit in Computer Science at the 200 level or above.

**Note:**

In special cases Computer Science 95.103★ (or 95.104★, no longer offered) may replace 95.105★, although only one of 95.103★, 95.104★, 95.105★ can be counted for credit in the Computer Mathematics program.

**Statistics (Honours B.A. and B.Sc.)**

This program requires a minimum of 11 credits in Mathematics and Statistics. The program may be of particular interest to a student wishing to pursue a career as a professional statistician.

Course requirements for this program are:

1. Core requirements (see p. 366; Mathematics 70.210 may be deferred until Third year);
2. Mathematics 69.257★, 69.259★;
3. Computer Science 95.105★ (or 95.103★), 95.106★;
4. Mathematics 70.350, 70.355★, 70.356★, 69.386★;
5. Mathematics 70.450★, and 1.5 credits from the range Mathematics 70.451★ to 70.459★.

**Combined Honours Programs: B.A. and B.Sc.****Economics and Mathematics (Honours B.A.)**

This program requires a minimum of 6.5 credits in Economics and 8.5 credits in Mathematics, plus either Economics 43.220 or Mathematics 69.257★ and 69.259★. All course selections must be approved by the Department of Mathematics and Statistics and the Department of Economics.

Course requirements for this program are:

1. Mathematics 69.102, 69.112 (or their equivalents);
2. Mathematics 70.200, 70.210, 70.260; either Economics 43.220, or Mathematics 69.257★ and 69.259★;
3. Mathematics 70.301★, 70.302★, 70.350; and one additional half credit in Mathematics at the 300 or 400 level;
4. one additional credit in Mathematics at the 400 level;
5. the Economics requirements as given on p. 124.

**Mathematics and Philosophy (Honours B.A.)**

This program requires a minimum of seven credits in Philosophy and nine credits in Mathematics. All course selections must be approved by the Department of Mathematics and Statistics and the Department of Philosophy.

Course requirements for this program are:

1. Mathematics 69.102, 69.112 (or their equivalents);
2. Mathematics 70.200, 70.210, 70.260, 70.301★, 70.302★, 70.310;
3. one additional credit in Mathematics at the 300 or 400 level;
4. one additional credit in Mathematics at the 400 level.

5. For the requirements in Philosophy, consult the Honours supervisor in the Department of Philosophy.

### Other Combined Programs (Honours B.A.)

Other Combined Honours programs such as German and Mathematics, Geography and Mathematics are available. Please consult the Department of Mathematics and Statistics for full details.

### Computer Science and Mathematics (Honours B.Sc.)

This program is administered by the Committee on Combined Programs with Computer Science (CCPCS); the committee consists of representatives from the School of Computer Science, the Department of Physics, and the Department of Mathematics and Statistics.

Enrolment in this program is limited. Applicants should note that meeting the minimum published requirements for admission to this program does not imply automatic acceptance.

Applications for admission to this program will only be processed by the Committee during the periods mid-May to mid-June, and mid-August to mid-September each year.

#### *Continuation in the Program:*

To continue in the program, a student must:

- (a) by the end of August each year, have gained at least one half credit in the past 12 months towards the degree requirements, and
- (b) have accumulated a grade-point average of 6.5 or better in each of Computer Science and Mathematics, and a grade-point average of 5.0 or better overall. (Grade-point averages are to include any failing grades that have not yet been replaced by a passing grade in the same or a substitute course.)

Failure to comply with these standards requires withdrawal from the program.

This program requires a minimum of 15 credits in Computer Science and Mathematics, placing equal emphasis on both these disciplines. Students may choose one of two options which serve as areas of concentration. All course selections must be approved both by the Department of Mathematics and Statistics and the School of Computer Science. A total of 20 credits is required in accordance with the conditions given below.

#### *Note:*

Some courses offered by the School of Business and the Department of Systems and Computer Engineering may be taken for credit as Computer Science courses in this program. For a complete list of these courses see pp. 69-70.

#### *Core Requirements (10 credits in Mathematics and Computer Science):*

1. Mathematics 69.102, 69.117★; Computer Science 95.102★, 95.105★, 95.106★;

#### *Note:*

Students who wish to keep open the choice of other Honours programs in Mathematics and Statistics, are advised to take Mathematics 69.112 instead of 69.117★ (and 69.217★).

2. Mathematics 70.200, 69.217★; Computer Science 95.202★, 95.203★, 95.204★, and one of 95.206★, 95.207★;
3. Mathematics 70.210; Computer Science 95.300★, 95.305★, 95.384★, 95.385★; Mathematics 70.495★ or Computer Science 95.495★.

4. one First-year Experimental Science credit. Two credits in Arts or Social Sciences. Concerning Social Science electives, see the note on p. 000.

5. two free option credits, subject only to the requirement that of the total of 20 credits, not more than seven may be below the 200 level.

Candidates must also satisfy the requirements of one of the following two options: (Each option contains five credits in Computer Science and Mathematics.)

#### **Option: Computing Theory and Numerical Methods (CTNM)**

1. Mathematics 70.260;
2. Mathematics 69.381★, 69.386★ and one of Mathematics 70.301★, 70.302★, 70.307★, 70.308★;
3. Mathematics 70.484★, and one credit from Mathematics 70.482★, 70.483★, 70.485★, 70.486★, 70.488★;
4. one additional credit in Computer Science at the 300 level or above.

#### **Option: Statistics and Computing (STC)**

1. Mathematics 69.257★, 69.259★; 69.265★ (or 70.260) (must be taken in Second year);
2. Mathematics 70.350, and at least one of 70.355★, 70.356★;
3. one credit in Mathematics from the range Mathematics 70.450★ to 70.459★;
4. one credit in Computer Science at the 400 level.

### Geology and Statistics (Honours B.Sc.)

This program requires a total of 20 credits including 15 credits in geology and mathematics.

Course requirements for this program are:

#### *First Year*

1. Mathematics 69.102, 69.117★;
2. Geology 67.100;
3. Chemistry 65.100, and one of Biology 61.100 (or 61.101), Physics 75.100 (or 75.105);
4. Computer Science 95.103★ (or 95.105★).

#### *Second Year*

1. Mathematics 69.208★, 69.217★, 69.257★, 69.259★;
2. Geology 67.221★, 67.222★, 67.228★, 67.233★, 67.281★;
3. one half credit free option (or Computer Science 95.106★, if 95.105★ was taken in First year).

#### *Third and Fourth Years*

1. Mathematics 69.244★, 69.350, 70.355★, 70.452★, 70.453★, and one half credit from: 69.304★, 69.381★, 69.386★;
2. two of the following three blocks:
  - (a) Geology 67.323★, 67.324★
  - (b) Geology 67.381★, 67.382★
  - (c) Geology 67.234★, and either 67.333★ or 67.334★;
3. one and a half credits in Geology at the 400 level;
4. Geology 67.498; or Mathematics 70.495★ and one additional half credit in Mathematics or Statistics at the 300 level or above;
5. two Arts or Social Science elective credits.



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**Mathematics and Physics (Double Honours B.Sc.)**


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This program requires a minimum of 21½ credits including 18½ credits in Mathematics and Physics.

Entrance criteria for the program are successful completion of First year with an average grade of B+ or better in Mathematics 69.102, 69.112 (or their equivalents), and Physics 75.100 or permission of both departments.

Course requirements for this program are:

*First Year*

1. Mathematics 69.102, 69.112 (or their equivalents);
2. Physics 75.100;
3. Chemistry 65.100 or Biology 61.100;
4. one Arts or Social Science elective credit.

*Note:*

It is highly recommended that Computer Science 95.103★ be taken in the First year in addition to the foregoing courses. When this course is taken for credit, it will be included in the calculation of the overall grade-point average.

*Second Year*

1. Mathematics 70.200, 70.210, 70.260;
2. Physics 75.211★, 75.222★, 75.235★, 75.342★;
3. one elective half credit in Arts or Social Sciences.

*Third Year*

1. Mathematics 70.301★, 70.302★, 70.310;
2. Physics 75.307★, 75.338★, 75.361★, 75.362★, 75.381★;
3. one additional half credit in Mathematics or Physics at the 300 level;
4. either Mathematics 70.307★ and Physics 75.388★, or Physics 75.386.

*Fourth Year*

1. one credit in Mathematics at the 400 level;
2. Physics 75.437★, 75.447★, 75.477★, 75.478★;
3. one additional credit in Mathematics or Physics at the 300 or 400 level;
4. either Mathematics 70.495★ or one of Physics 75.497★, 75.498★;
5. one elective half credit in Arts or Social Sciences.

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**Operations Research**


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The Department of Mathematics and Statistics offers a program in Operations Research leading to either a B.A. or a B.Sc. Honours degree. Information and a detailed outline of the requirements for this program are given on pp. 211 and 379.

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**Graduate Programs: M.Sc. and Ph.D.**


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For requirements for graduate degrees, see the Calendar for the Faculty of Graduate Studies and Research.

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**Course Numbering**


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Course numbers prefixed by 70 indicate courses intended primarily for Honours students; all other courses have numbers prefixed by 69. Credit will not be given for two courses having the same number but different prefixes.

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**Courses Offered**


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*Note:*

Students who have completed Ontario Grade 12 Mathematics, but who have been away from mathematics for several years, or who feel that their mathematics background is weak, should consider taking the course "Refresher Workshop in Mathematics." The Refresher Workshop is offered by the School of Continuing Education as the non-credit course CE 658, and is highly recommended for remedial purposes.

**Mathematics 69.006★**

**Elementary Functions and their Graphs**

Review and further study of algebraic, exponential, logarithmic and trigonometric functions; solution of equations; conics; various graphical techniques.

Prerequisite: Grade 12 Mathematics.

Day and Evening divisions, Fall term; Evening division, Winter term: Lectures three hours a week and one hour tutorial.

**Mathematics 69.007★**

**Introductory Calculus**

Limits and continuity. Derivatives (including: logarithmic, exponential and trigonometric functions); curve sketching; applied problems in maxima and minima, and related rates. An introduction to anti-derivatives and to the definite integral, with applications.

Prerequisite: Mathematics 69.006★ or equivalent; may be taken concurrently with the permission of the Department.

Evening division, Fall term; Day and Evening divisions, Winter term: Lectures three hours a week and one hour tutorial.

**Mathematics 69.102**

**Calculus**

Functions, limits, derivatives, differentiation and applications, the definite integral, special functions, techniques of integration (including partial fractions), parametric equations, improper integrals, l'Hôpital's rules, sequences and series, Taylor's formula and series, differential equations.

Intended for students registered in a Mathematics, Physics, or Computer Science program.

Precludes additional credit for Mathematics 69.104★, 69.107★, 69.109★, 69.207★; and for Mathematics 69.131★ (Architecture 79.101★), Mathematics 69.231★ (Architecture 79.212★), no longer offered.

Prerequisites: Grade 13 Mathematics: Functions and Calculus.

Day division: Lectures three hours a week and one hour tutorial.

*Note:*

Students with less than a 75% average in Grade 13 Functions and Relations, and Calculus (or their equivalent), are advised that the previous experience of the Department indicates that their chance of success in Mathematics 69.102 is minimal, without exceptionally hard work.

Mathematics 69.104★

**Calculus for Engineering Students**

Functions, derivatives and applications (extrema problems, curve sketching); approximations with derivatives; the mean value theorem. Algebraic functions. The definite and indefinite integral; numerical approximation. Special functions (trigonometric and inverse trigonometric, logarithm and exponential), their derivatives and integrals. Applications: area, volume, average values. Further techniques of integration: integration by parts, partial fractions, and substitutions. An introduction to differential equations. Restricted to students in the Faculty of Engineering.

Precludes additional credit for Mathematics 69.102, 69.107★, 69.109★.

Prerequisites: Grade 13 Mathematics: Functions and Calculus (or their equivalent).

Day division, Fall term: Lectures three hours a week and one hour tutorial.

Mathematics 69.107★

**Elementary Calculus I**

Functions, limits, derivatives, differentiation and applications, special functions, the definite and indefinite integral and techniques of integration.

Precludes additional credit for Mathematics 69.102, 69.104★, 69.109★; and for Mathematics 69.131★ (Architecture 79.101★), Mathematics 69.231★ (Architecture 79.212★), no longer offered.

Prerequisites: Grade 13 Mathematics: Functions and Calculus.

Day and Evening divisions, Fall and Winter terms: Lectures three hours a week and one hour tutorial.

*Note:*

A grade of C- or better in Mathematics 69.107★ is a prerequisite for certain 200-level Mathematics courses.

Mathematics 69.109★

**Calculus: with Applications to Business and Economics**

Study of functions including trigonometric, logarithmic, exponential, explicit, implicit and inverse; differentiation; integration techniques; functions of several variables; partial differentiation; constrained optimization. Applications in the fields of business and economics.

Precludes additional credit for Mathematics 69.102, 69.104★, 69.107★; and for Mathematics 69.131★ (Architecture 79.101★), Mathematics 69.231★ (Architecture 79.212★), no longer offered.

Prerequisites: Grade 13 Mathematics: Functions and Calculus.

Day and Evening divisions, Fall term; Evening division, Winter term: Lectures three hours a week and one hour tutorial.

Mathematics 69.112

**Algebra**

Fields, complex numbers, vector algebra and geometry in 2 and 3 dimensions, matrix algebra, linear dependence, bases, linear transformations, bilinear and quadratic forms, inner products, eigenvalues, principal axis theorem. Intended for students registered in a Mathematics or Physics program.

Precludes additional credit for Mathematics 69.114★, 69.117★, 69.119★, 69.217★; and for Mathematics 69.132★ (Architecture 79.201★), no longer offered.

Prerequisites: Grade 13 Mathematics: Functions and Calculus.

Day division: Lectures three hours a week and one hour tutorial.

*Note:*

Students with less than a 75% average in Grade 13 Functions and Relations, and Calculus (or their equivalent), are advised that the previous experience of the Department indicates that their chance of success in Mathematics 69.112 is minimal, without exceptionally hard work.

Mathematics 69.114★

**Algebra for Engineering Students**

Solution of linear equations. Matrix algebra. Algebra and geometry of complex numbers. Vector algebra and geometry. Restricted to students in the Faculty of Engineering. Precludes additional credit for Mathematics 69.112, 69.117★, 69.119★.

Prerequisites: Grade 13 Mathematics: Functions and Calculus (or their equivalent).

Day division, Winter term: Lectures three hours a week and one hour tutorial.

Mathematics 69.117★

**Elementary Algebra**

Complex numbers, vector algebra and geometry in two and three dimensions, matrix algebra.

Precludes additional credit for Mathematics 69.112, 69.114★, 69.119★; and for Mathematics 69.132★ (Architecture 79.201★), no longer offered.

Prerequisites: Grade 13 Mathematics: Functions and Calculus.

Day and Evening divisions, Fall and Winter terms: Lectures three hours a week and one hour tutorial.

*Note:*

A grade of C- or better in Mathematics 69.117★ is a prerequisite for certain 200-level Mathematics courses.

Mathematics 69.119★

**Algebra: With Applications to Business and Economics**

Algebraic concepts, systems of linear equations, vector algebra; matrix algebra, rank, inversion, determinants; linear programming — geometric approach, simplex method, etc. Applications in the fields of business and economics.

Precludes additional credit for Mathematics 69.112, 69.114★, 69.117★; and for Mathematics 69.132★ (Architecture 79.201★), no longer offered.

Prerequisites: Grade 13 Mathematics: functions and calculus.

Day and Evening divisions, Winter term: Lectures three hours a week and one hour tutorial.

Mathematics 69.141★

**Gambling I**

History of gambling. Blackjack, craps, poker, horse-racing, roulette, backgammon, bookmaking and stock market. Detection of methods of cheating. Intended primarily for students *not* majoring in Mathematics.

Not offered 1986-87.

Mathematics 69.142★

**Gambling II**

A deeper mathematical investigation into some of the topics covered in Mathematics 69.141★, plus the topics of game theory and gamblers' ruin formulas. Statistical methods for detecting cheating. Some discussion also of the psychology and sociology of gambling. Intended primarily for students *not* majoring in Mathematics.

Prerequisites: Grade 13 Mathematics (or equivalent) and Mathematics 69.141★.

Not offered 1986-87.



Mathematics 69.201

**Intermediate Calculus**

Differential calculus of functions of several variables, multiple integration, elements of infinite series, complex numbers, differential equations. Restricted to students in Engineering or Physics.

Precludes additional credit for Mathematics 69.202, 69.207★, 69.208★, 69.244★, 70.200, 70.260.

Prerequisites: Mathematics 69.117★ (may be taken concurrently) and Mathematics 69.107★. Commencing in the academic year 1987-88, Mathematics 69.104★ and 69.114★ will be required (or Mathematics 69.107★ with a grade of C- or better, and credit in Mathematics 69.117★). Day division: Lectures three hours a week and one hour tutorial.

Mathematics 69.202

**Intermediate Mathematics**

Partial differentiation, infinite series, multiple integration, differential equations, Fourier series, introduction to matrix and eigenvalue problems. Intended for Science students.

Precludes additional credit for Mathematics 69.201, 69.207★, 69.208★, 69.244★, 70.200, 70.260.

Prerequisites: Mathematics 69.107★ and 69.117★ with an average grade of C- or better. Day division: Lectures three hours a week and one hour tutorial.

Mathematics 69.207★

**Elementary Calculus II**

Further techniques of integration, improper integrals, polar coordinates, parametric equations, indeterminate forms, sequences and series, Taylor's formula and series, first order and linear differential equations.

Precludes additional credit for Mathematics 69.102, 69.201, 69.202.

Prerequisite: Mathematics 69.107★ (or 69.109★) with a grade of C- or better.

Day division, Fall term and Evening division, Winter term: Lectures three hours a week and one hour tutorial.

Mathematics 69.208★

**Intermediate Calculus**

Partial differentiation, chain rule, gradient, line and multiple integrals with applications, transformations, implicit and inverse function theorems.

Precludes additional credit for Mathematics 69.201, 69.202, 70.200.

Prerequisites: Mathematics 69.102 or 69.207★, and 69.112 or 69.117★.

Day division, Fall term and Evening division, Winter term: Lectures three hours a week and one hour tutorial.

Mathematics 69.217★

**Linear Algebra**

n-dimensional vector spaces, linear dependence and bases, linear transformations and matrices, bilinear and quadratic forms, inner products, eigenvalues, principal axis theorem.

Precludes additional credit for Mathematics 69.112.

Prerequisite: Mathematics 69.117★ (or 69.119★) with a grade of C- or better.

Day division, Fall term and Evening division, Winter term: Lectures three hours a week and one hour tutorial.

Mathematics 69.218★

**Introductory Abstract Algebra**

Sets and relations, number theory, group theory, ring theory, cardinal numbers.

Precludes additional credit for Mathematics 69.311★

and 70.210.

Prerequisites: Mathematics 69.112 or 69.217★.

Day division, Fall term and Evening division, Winter term: Lectures three hours a week and one hour tutorial.

Mathematics 69.244★

**Ordinary Differential Equations I**

Ordinary differential equations and their applications. Techniques of solving special types of first-order equations. Special solvable equations of second order. Linear equations of order n. Homogeneous and non-homogeneous linear equations with constant coefficients; variation of parameters; simple harmonic motion. Linear ordinary differential equations with variable coefficients of special types (e.g. Cauchy, Legendre). Series solutions of ordinary differential equations of second order about ordinary points.

Precludes additional credit for Mathematics 69.201, 69.202, 70.260 and for Mathematics 69.245★ (no longer offered).

Prerequisites: Mathematics 69.102 and 69.112 (or 69.117★ and 69.207★).

Day division, Winter term: Lectures three hours a week and one hour tutorial.

Mathematics 69.250

**Introduction to Statistical Analysis**

Frequency distributions; moments; measures of central tendency, dispersion, skewness; probability; distributions (binomial, Poisson, normal, z, t, F,  $\chi^2$ ); statistical inference, confidence intervals; experimental designs (randomized block, Latin square); enumeration statistics; least squares analysis, introduction to correlation and regression analysis; non-parametric tests. Intended for non-mathematics students.

Precludes additional credit for Mathematics 69.257★, 69.259★, 69.266★, 69.267★, Economics 43.220, Geography 45.201★, Psychology 49.200.

Prerequisite: Mathematics 69.007★.

Not offered 1986-87.

Mathematics 69.257★

**Introduction to Statistics**

Data analysis; introduction to probability theory; some standard discrete and continuous distributions such as the binomial, Poisson, hypergeometric, normal, t, and chi-square; their application to interval estimation and significance testing; simple linear regression and correlation, contingency tables; testing for goodness-of-fit. Computational aspects of statistics. Not acceptable for Engineering students.

Precludes additional credit for Mathematics 69.250, 69.266★, Economics 43.220, Geography 45.201★.

Prerequisites: Mathematics 69.107★ and 69.117★ or their equivalent. May be taken concurrently.

Day and Evening divisions, Fall term and Day division, Winter term: Lectures three hours a week and one hour laboratory.

Mathematics 69.259★

**Computational Statistics**

Exploratory data analysis, non-parametric methods, linear regression; basic experimental designs; cluster analysis. The use of a computer package such as SPSS, BMDP, DAP, MINITAB is emphasized.

Precludes additional credit for Mathematics 69.250, 69.267★, 69.352★, Economics 43.220.

Prerequisite: Mathematics 69.257★ or equivalent or permission of the Department.

Day division, Winter term: Lectures three hours a week and one hour laboratory.

Mathematics 69.265★

**Probability Models**

Introductory probability theory including conditional probability, independence, discrete and continuous random variables, Shannon information and coding. Introduction to stochastic modelling, Markov chains and queueing theory. Random number generators and Monte Carlo computer simulation. Statistical methods of fitting and evaluating models; estimation and goodness-of-fit tests. The basic ideas and methods are illustrated with applications to computer system performance evaluation, analysis of algorithms, reliability, search and decision problems. Restricted to students in the Bachelor of Computer Science program.

Precludes additional credit for Mathematics 70.260.

Prerequisites: Mathematics 69.102 and 69.117★.

Day division, Winter term: Lectures three hours a week and one hour tutorial.

Mathematics 69.266★

**Business Statistics I**

Descriptive statistics; probability concepts; discrete and continuous random variables; normal,  $t$ , chi-square and  $F$  distributions; interval estimation; testing hypotheses; enumeration statistics; introduction to statistical packages. Emphasis is placed on developing an ability to interpret the results of statistical analyses with applications drawn from the business world. Restricted to students in the School of Business.

Precludes additional credit for Mathematics 69.250, 69.257★, Economics 43.220, Geography 45.201★, Psychology 49.200, 49.205★.

Prerequisites: Mathematics 69.109★ and 69.119★ (or their equivalents) with an average grade of C- or better.

Day division, Fall term: Lectures three hours a week and one hour laboratory.

Mathematics 69.267★

**Business Statistics II**

Topics in simple and multiple linear regression analysis; simple, multiple and partial correlation; one- and two-way analyses of variance; covariance analysis; simple random, stratified, cluster, systematic, two-stage sampling from a finite population; non-parametric tests. SPSS (or an equivalent computer package) is used to illustrate the computational and interpretational aspects of the course. Restricted to students in the School of Business.

Precludes additional credit for Mathematics 69.250, 69.259★, Economics 43.220.

Prerequisite: Mathematics 69.266★.

Day division, Winter term: Lectures three hours a week and one hour laboratory.

Mathematics 69.304★

**Boundary Value Problems**

Laplace transforms. Differential equations; solution in series; the formulation of boundary value problems in mechanics, heat conduction, etc.; the method of separation of variables; eigenfunctions and eigenvalues; Fourier series; Bessel and Legendre functions and applications. This course may be taken for credit as a 300-level Honours Mathematics course, by students in any Honours program in the Department of Mathematics and Statistics. Precludes additional credit for Mathematics 69.375★, 70.308★, and for Mathematics 69.306★ (no longer offered).

Prerequisites: Mathematics 69.201; or 69.202; or 69.208★ and 69.244★, or permission of the Department.

Day division, Fall term: Lectures three hours a week and one hour tutorial.

Mathematics 69.307★

**Functions of a Complex Variable**

Analytic functions, contour integration, residue calculus, conformal mapping. Intended for non-engineering students.

Precludes additional credit for Mathematics 69.305★ (no longer offered), 69.376★ or 70.307★.

Prerequisite: Mathematics 69.201, 69.202 or 69.208★.

Day division, Winter term: Lectures three hours a week and one hour tutorial.

Mathematics 69.309★

**Topics in Analysis**

The real number system, sequences and series, functions of a single real variable, derivatives, the definite integral, uniform convergence.

Precludes additional credit for Mathematics 70.200.

Prerequisite: Mathematics 69.201, 69.202 or 69.208★.

Day division, Winter term: Lectures three hours a week and one hour tutorial.

Mathematics 69.310

**Applied Algebra**

Similarity of matrices, Jordan form, spectral decomposition, Markov chains, systems of differential and difference equations, quadratic forms, symmetric operators. Rayleigh-Ritz principle. Generalized inverse and applications to statistics; least-squares with applications to Fourier series; factorizations over classical number systems; finite field extensions with applications including Latin squares, error correcting codes; Boolean rings with applications to logic and switching circuits.

Precludes additional credit for Mathematics 70.210 or 70.310.

Prerequisites: Mathematics 69.217★ and 69.218★ or permission of the department.

Not offered 1986-87.

Mathematics 69.311★

**Algebraic Structures with Computer Applications**

Introduction to algebraic structures: groups, rings, fields, lattices, and Boolean algebras; with applications of interest to students in computer science. This course is intended primarily for students in the computer science programs and the operations research programs.

Precludes additional credit for Mathematics 69.218★ or 70.210.

Prerequisites: Mathematics 69.217★ and one of Computer Science 95.201★ (no longer offered), 95.202★ or 95.207★ or permission of the Department.

Day division, Fall term and Evening division, Winter term: Lectures three hours a week and one hour tutorial.

Mathematics 69.325★

**Euclidean Geometry and its Groups**

Transformations of the Euclidean plane (isometries, similarities); solutions of geometric problems using these transformations; groups of symmetries of finite plane figures, frieze patterns, and regular polyhedra; inversion and the extension to the inversive plane; problems solved using inversion; orthogonal circles and pencils of coaxial circles.

Prerequisite: Mathematics 69.218★.

Not offered 1986-87.

Mathematics 69.326★

**Plane Projective Geometry**

Axioms of Desarguesian geometry, principle of duality; projectivities, perspectivities, and the fundamental theorem; collineations (homologies and elations); correlations (polarities and conics); algebraic model; introduction



to finite projective planes.

Precludes additional credit for Mathematics 70.326★.

Prerequisite: Mathematics 69.218★.

Not offered 1986-87.

#### Mathematics 69.344★

##### **Ordinary Differential Equations II**

Series solutions of ordinary differential equations of second order about regular singular points; asymptotic solutions. Systems of ordinary differential equations of first order; matrix methods. Existence and uniqueness theorems. Nonlinear autonomous systems of order 2; qualitative theory. Numerical solutions of ordinary differential equations.

Precludes additional credit for Mathematics 70.308★.

Prerequisites: Mathematics 69.244★, 69.208★ and 69.217★.

Not offered 1986-87.

#### Mathematics 69.350

##### **Statistical Theory**

Discrete and continuous distributions: moment generating functions, marginal and conditional distributions, transformation theory, limiting distributions; point and interval estimation, hypothesis testing, chi-square tests with enumeration data; linear models.

Precludes additional credit for Mathematics 70.350.

Prerequisites: Mathematics 69.208★ (or 69.201 or 69.202) and one of 69.250, 69.257★, 69.259★, 69.267★, Economics 43.220 or permission of the Department.

Day division: Lectures three hours a week and one hour tutorial.

#### Mathematics 69.351

##### **Statistical Methods**

Statistical preliminaries; simple and multiple regression techniques; correlation analysis; design of experiments including the completely randomized, randomized block, Latin square designs; factorial treatment structures; the analysis of covariance; non-parametric methods, related topics.

Precludes additional credit for Mathematics 70.355★; Psychology 49.300 is precluded for additional credit for students registered in a mathematics program.

Prerequisites: Mathematics 69.259★, or Mathematics 69.266★ and 69.267★, or Economics 43.220, or an introductory credit in Statistics approved by the Department.

Day division: Lectures three hours a week and one hour laboratory.

#### Mathematics 69.352★

##### **Engineering Statistics**

Displays and summaries, normal,  $t$ , chi-square and  $F$  distributions, maximum likelihood estimation, confidence intervals and tolerance limits, Bayesian approach, hypothesis testing, chi-square goodness-of-fit, and testing independence in contingency tables. Engineering applications: acceptance sampling, quality control charts, life testing and statistical reliability. Simple and multiple regression. Restricted to students in the Faculty of Engineering.

Precludes additional credit for Mathematics 69.250, 69.257★, 69.258★ (no longer offered), 69.259★.

Prerequisite: Engineering 94.265★.

Day division, Winter term: Lectures three hours a week and one hour laboratory.

#### Mathematics 69.375★

##### **Mathematical Methods I**

Laplace transforms, Fourier series and Fourier trans-

forms, solutions of partial differential equations of mathematical physics, boundary value problems, applications. Restricted to students in Engineering or Physics.

Precludes additional credit for Mathematics 69.304★, 69.305★, 69.306★ (the latter two no longer offered).

Prerequisite: Mathematics 69.201.

Day division, Fall term: Lectures three hours a week and one hour tutorial.

#### Mathematics 69.376★

##### **Mathematical Methods II**

Analytic functions, contour integration, residues, applications. Matrix theory, eigenvalues, diagonalization of symmetric matrices, applications. Restricted to students in Engineering or Physics.

Precludes additional credit for Mathematics 69.307★, 70.307★, 69.305★ (no longer offered).

Prerequisite: Mathematics 69.201.

Day division, Winter term: Lectures three hours a week and one hour tutorial.

#### Mathematics 69.381★

##### **Optimization**

Mathematical foundations of model building. Classical optimization. Unconstrained problems. Linear programming, network flow problems, nonlinear programming. Integer programming.

Precludes additional credit for Business 42.230★, Economics 43.404★, Engineering 94.320★.

Prerequisites: Mathematics 69.208★ (or 69.201), 69.217★.

Evening division, Winter term: Lectures three hours a week and one hour tutorial.

#### Mathematics 69.384★

##### **Data Structures and Algorithm Analysis**

Review of basic data structures such as stacks, queues and lists. Algorithms for their implementation. Representation of arrays, sets and relations. Trees and graphs — representation and applications. Basic techniques of design and analysis of efficient algorithms for sorting and searching. Hashing, dynamic storage allocation, garbage collection. (Also listed as Computer Science 95.384★.)

Prerequisites: A 200-level Mathematics course and Computer Science 95.202★.

Day division, Fall and Winter terms: Lectures three hours a week.

#### Mathematics 69.386★

##### **Numerical Analysis**

Elementary discussion of error, polynomial interpolation, quadrature, linear systems of equations and matrix inversion, non-linear equations, difference equations and ordinary differential equations. (Also listed as Computer Science 95.386★.)

Prerequisites: Computer Science 95.103★ or 95.106★, Mathematics 69.102 or 69.207★ (or 69.201 or 69.202) and 69.112 or 69.217★.

Day division, Fall term: Lectures three hours a week and one hour tutorial.

#### Mathematics 69.387★

##### **Mathematical Software**

Incorporation of basic numerical methods into efficient, reliable software. The course includes examination of existing software systems, e.g., linear systems, non-linear systems, optimization, or differential equations. (Also listed as Computer Science 95.387★.)

Prerequisite: Mathematics 69.386★.

Day division, Winter term: Lectures three hours a week and one hour tutorial.

**Mathematics 69.389★**

**Computational Number Theory**

This course treats a number of topics from elementary number theory in a computational and algorithmic way. The topics are chosen from: primality testing, factorization of integers and polynomials, solution of diophantine equations, approximation of irrationals by rationals.

Prerequisites: Mathematics 69.218★ or 69.311★ or 70.210; knowledge of a computer language is also required.

Evening division, Fall term: Lectures three hours a week and one hour tutorial.

**Mathematics 69.397★**

**Directed Studies**

Available only to students whose program requires a half credit not offered by the Department of Mathematics and Statistics.

■ **Mathematics Courses for Honours Students**

**Mathematics 70.200**

**Calculus and Introductory Analysis**

Higher dimensional calculus, chain rule, gradient, line and multiple integrals with applications. Use of implicit and inverse function theorems. Real number axioms, limits, continuous functions, differentiability, infinite series, uniform convergence, the Riemann integral.

Precludes additional credit for Mathematics 69.201, 69.202, 69.208★, 69.309★.

Prerequisite: Mathematics 69.102 or 69.207★.

Day division: Lectures three hours a week and one hour tutorial.

**Mathematics 70.210**

**Algebra**

Set theory, algebraic systems, vector spaces, inner product spaces, linear transformations, determinants, quadratic forms, selected applications.

Precludes additional credit for Mathematics 69.218★ or 69.311★.

Prerequisites: Mathematics 69.112 or 69.217★.

Day division: Lectures three hours a week and one hour tutorial.

**Mathematics 70.260**

**Introduction to the Applications of Mathematics**

Ordinary differential equations of order one and two. Systems of linear differential equations. Existence and uniqueness. Difference equations. Modelling with differential and difference equations. Numerical solutions. Random variables, distribution functions, joint and conditional distributions, generating functions. Stochastic models, Markov chains. Simulation. Applications to areas such as reliability, queueing, econometrics, statistical mechanics and operations research.

Precludes additional credit for Mathematics 69.201, 69.202, 69.244★, 69.265★, and for 69.245★ (no longer offered).

Prerequisites: Mathematics 69.102 (or 69.207★) and 69.112 (or 69.217★); knowledge of a computer language is also required.

Day division, Lectures three hours a week and one hour tutorial.

**Mathematics 70.297★**

**Directed Studies**

Available only to Honours students whose program requires a half credit not offered by the Department of Mathematics and Statistics.

**Boundary Value Problems**

*Note:*

Mathematics 69.304★, Boundary Value Problems, may be taken for credit as a 300-level Honours Mathematics course, by students in any Honours program in the Department of Mathematics and Statistics (see p. 372).

**Mathematics 70.301★**

**Real Analysis**

Metric spaces; limits, continuity, open and closed sets, compactness, connectedness and completeness. Uniform convergence of sequences of functions, as convergence in metric spaces of bounded and continuous functions. Weierstrass approximation theorem. Contraction mappings and applications to integral and differential equations.

Prerequisite: Mathematics 70.200 or permission of the Department.

Day division, Winter term: Lectures three hours a week and one hour tutorial.

**Mathematics 70.302★**

**Advanced Calculus**

Functions of bounded variation. Calculus and analysis of the Riemann-Stieltjes integral. Vector fields, the functions div, curl and grad. Line integrals, path independence, Green's theorem. Orientable surfaces, Stokes' theorem. Prerequisite: Mathematics 70.200 or permission of the Department.

Day division, Fall term: Lectures three hours a week and one hour tutorial.

**Mathematics 70.307★**

**Functions of a Complex Variable**

Analytic functions, contour integration, residue calculus, conformal mapping.

Precludes additional credit for Mathematics 69.305★ (no longer offered), 69.307★ or 69.376★.

Prerequisite: Mathematics 70.200 or permission of the Department.

Day division, Fall term: Lectures three hours a week and one hour tutorial.

**Mathematics 70.308★**

**Ordinary Differential Equations**

Analytic ordinary differential equations: series solutions of ordinary differential equations about ordinary and regular singular points. Asymptotic solutions. Sturm-Liouville theory. Bessel and Legendre functions. Fourier series.

Precludes additional credit for Mathematics 69.304★, 69.344★.

Prerequisites: Mathematics 70.200, 70.301★; Mathematics 70.301★ may be taken concurrently. Effective September 1987, Mathematics 70.200 and 70.260 will be required.

Day division, Winter term: Lectures three hours a week and one hour tutorial.

**Mathematics 70.310**

**Modern Algebra**

Graphs, groups, rings, integral domains, fields; polynomial domains and linear algebra with applications to enumeration problems, optimization of combinatorial problems, coding theory.

Precludes additional credit for Mathematics 69.310, 70.385★.

Prerequisite: Mathematics 70.210 or permission of the Department.

Day division: Lectures three hours a week and one hour tutorial.



Mathematics 70.326★

**Foundations of Projective Geometry**

Definition of a general projective plane and immediate consequences; finite planes (combinatorial results, subplanes, incidence matrices) and planar ternary rings; collineations, role of Desargues' configuration, examples of types of planes.

Prerequisite: Mathematics 70.210.

Precludes additional credit for Mathematics 69.326★.

Not offered 1986-87.

Mathematics 70.336★

**Elements of Set Theory**

Informal treatment of the axioms of set theory. Development of the systems of natural numbers, integers, rational numbers and real numbers, using both Dedekind sections and Cauchy sequences based on Peano's axioms. The axiom of choice, Zorn's lemma, well-ordering. The Schröder-Bernstein theorem, cardinal numbers, ordinal numbers, transfinite induction, cardinal and ordinal arithmetics.

Prerequisite: Mathematics 70.210 or permission of the Department.

Not offered 1986-87.

Mathematics 70.345★

**Classical Mechanics**

Axiomatic approach to Newtonian mechanics. Simple harmonic motion. One- and two-dimensional projectiles. Central forces; planetary orbits. Systems of particles; collision problems. Moments and products of inertia; two-dimensional rigid body motions. Generalized coordinates; Lagrange's equation. Moving axes; motion near the surface of the earth.

Precludes additional credit for Mathematics 69.345★ (no longer offered).

Prerequisites: Mathematics 70.200 (or 69.208★) and 70.260 (or 69.244★)

Not offered 1986-87.

Mathematics 70.346★

**Autonomous Dynamical Systems**

Basic concepts of dynamical systems. Stability; limit cycles; Lyapunov's direct method. Theory of autonomous dynamical systems. Volterra systems; principle of competitive exclusion in population biology. The threshold theorem of epidemiology. Basic concepts of nonequilibrium statistical mechanics.

Prerequisites: Mathematics 70.200 and 70.260.

Not offered 1986-87.

Mathematics 70.350

**Mathematical Statistics**

Random variables and moment-generating functions; concepts of conditioning and correlation; laws of large numbers, central limit theorem; multivariate normal distributions of functions of random variables, sampling distributions, order statistics, empirical distribution functions, Monte Carlo methods, elements of decision theory, point estimation, interval estimation, tests of hypotheses; robustness, nonparametric methods.

Precludes additional credit for Mathematics 69.350.

Prerequisites: Mathematics 70.260 (or 69.265★) and Mathematics 70.200 (or 69.208★), or permission of the Department.

Day division: Lectures three hours a week and one hour tutorial.

Mathematics 70.355★

**Regression and Experimental Design**

Linear statistical models and the method of least squares.

Theory and analysis of the completely randomized, randomized block, Latin square and nested designs; multiple comparisons. Factorial experiments, split plot and repeated measures designs, analysis of covariance.

Precludes additional credit for Mathematics 69.351; Psychology 49.300 is precluded for additional credit for students registered in a mathematics program.

Prerequisites: Mathematics 69.217★, 69.259★; 69.350 or 70.350 (which may be taken concurrently), or permission of the Department.

Day division, Winter term: Lectures three hours a week and one hour tutorial.

Mathematics 70.356★

**Stochastic Processes and Queueing Theory**

Stochastic modelling, Markov chains, birth and death processes, renewal theory. Queueing theory: analytical and simulation methods. Applications to computer systems, operations research and social sciences.

Prerequisites: Mathematics 69.208★, 69.217★ and 69.265★; or Mathematics 70.260; or permission of the Department.

Day division, Fall term: Lectures three hours a week and one hour tutorial.

Mathematics 70.385★

**Discrete Structures and Applications**

Algebraic structures; lattices, Boolean algebra; elements of the theory of directed and undirected graphs; combinatorics; Polya theory of enumeration, languages over an alphabet, switching circuits, optimization and complete design, algebraic codes, flow charts, connectivity, minimal paths. (Also listed as Computer Science 95.385★.)

Precludes additional credit for Mathematics 70.310.

Prerequisites: One of Mathematics 69.218★, 70.210 or 69.311★.

Day division, Fall and Winter terms: Lectures three hours a week and one hour tutorial.

■ A selection of courses in the 400 series will be offered.

Mathematics 70.401★

**Vector Calculus**

Linear transformations, multiple integrals, differential forms, vector functions and fields, vector calculus, applications.

Prerequisite: Mathematics 70.302★ or permission of the Department.

Not offered 1986-87.

Mathematics 70.403★

**Functional Analysis**

Banach spaces and bounded linear operators; Hahn-Banach extension and separation, dual spaces, bounded inverse theorems, uniform boundedness principle, applications. Compact operators. Differential calculus in Banach spaces, inverse and implicit function theorems and their application to differential equations.

Prerequisite: Mathematics 70.301★ or permission of the Department.

Day division, Winter term: Lectures three hours a week.

Mathematics 70.407★

**Measure and Integration Theory**

Lebesgue measure and integration on the real line; sigma algebras and measures; integration theory;  $L_p$  spaces; Fubini's theorem; decomposition theorems and Radon-Nikodym derivatives.

Prerequisite: Mathematics 70.301★ or 70.302★ or permission of the Department.

Day division, Fall term: Lectures three hours a week.

**Mathematics 70.415★**

**Rings and Modules**

Fundamental concepts in rings and modules, structure theorems, applications.

Prerequisite: Mathematics 70.310 or permission of the Department.

Not offered 1986-87.

**Mathematics 70.416★**

**Group Theory**

Fundamental principles as applied to abelian, nilpotent, solvable, free and finite groups; representations.

Prerequisite: Mathematics 70.310 or permission of the Department.

Day division, Winter term: Lectures three hours a week.

**Mathematics 70.417★**

**Commutative Algebra**

Fields, including algebraic and transcendental extensions, Galois theory, valuation theory; Noetherian commutative rings, including Noether decomposition theorem and localization.

Prerequisite: Mathematics 70.310 or permission of the Department.

Not offered 1986-87.

**Mathematics 70.418★**

**Homological Algebra and Category Theory**

Axioms of set theory; categories, functors, natural transformations; free, projective, injective and flat modules; tensor products and homology functors, derived functors; dimension theory.

Prerequisite: Mathematics 70.310 or permission of the Department.

Day division, Fall term: Lectures three hours a week.

**Mathematics 70.425★**

**Introduction to General Topology**

Topological spaces, maps, subspaces, product and identification topologies, separation axioms, compactness, connectedness.

Prerequisite: Mathematics 70.301★ or permission of the Department.

Day division, Fall term: Lectures three hours a week.

**Mathematics 70.426★**

**Introduction to Algebraic Topology**

An introduction to homotopy theory. Topics include the fundamental group, covering spaces and the classification of two-dimensional manifolds.

Prerequisites: Mathematics 70.310 and 70.425★ or permission of the Department.

Day division, Winter term: Lectures three hours a week.

**Mathematics 70.427★**

**Foundations of Geometry**

A study of at least one modern axiom system of Euclidean and non-Euclidean geometry, embedding of hyperbolic and Euclidean geometries in the projective plane, groups of motions, models of non-Euclidean geometry.

Prerequisite: Mathematics 70.310 (may be taken concurrently) or permission of the Department.

Not offered 1986-87.

**Mathematics 70.428★**

**Introduction to Differentiable Manifolds**

A study of differentiable manifolds from the point of view of either differential topology or differential geometry. Topics such as smooth mappings, transversality, intersection theory, vector fields on manifolds, Gaussian curvature, Riemannian manifolds, differential forms,

tensors and connections are included.

Prerequisite: Mathematics 70.301★ or permission of the Department.

Not offered 1986-87.

**Mathematics 70.435★**

**Analytic Number Theory**

Dirichlet series, characters, Zeta-functions, prime number theorem, Dirichlet's theorem on primes in arithmetic progressions, binary quadratic forms.

Prerequisite: Mathematics 70.307★ or permission of the Department.

Not offered 1986-87.

**Mathematics 70.436★**

**Algebraic Number Theory**

Algebraic number fields, bases, algebraic integers, integral bases, arithmetic in algebraic number fields, ideal theory, class number.

Prerequisite: Mathematics 70.310 (may be taken concurrently) or permission of the Department.

Not offered 1986-87.

**Mathematics 70.445★**

**Analytical Dynamics**

Dynamics of a rigid body in three dimensions. Euler angles. Inertia tensor, Euler's equations of motion. Hamilton's equations. Canonical transformation. Hamilton-Jacobi theory. Theory of small oscillations.

Prerequisite: Mathematics 70.345★ or permission of the Department.

Not offered 1986-87.

**Mathematics 70.446★**

**Hydrodynamics and Elasticity**

Properties of Cartesian tensors; fundamental laws; motion of fluids (perfect and viscous); elastic materials.

Prerequisites: Mathematics 70.307★, 70.345★ and 70.346★ or permission of the Department.

Not offered 1986-87.

**Mathematics 70.447★**

**Tensor Analysis and Relativity Theory**

Development of tensor analysis, application to Riemannian spaces and relativity theory.

Prerequisites: Mathematics 70.345★ and 70.346★ or permission of the Department.

Not offered 1986-87.

**Mathematics 70.450★**

**Parametric Estimation**

Preliminaries on probability theory; exact and asymptotic sampling distributions; unbiasedness, consistency, efficiency, sufficiency and completeness; properties of maximum likelihood estimators; least squares estimation of location and scale parameters based on order statistics and sample quantiles; Best Asymptotically Normal (BAN) estimators.

Prerequisite: Mathematics 70.350 or permission of the Department.

Day division, Fall term: Lectures three hours a week.

**Mathematics 70.451★**

**Probability Theory**

Introduction to probability, characteristic functions, probability distributions, limit theorems.

Prerequisite: Mathematics 70.350 or permission of the Department.

Day division, Winter term: Lectures three hours a week.



**Mathematics 70.452★****Survey Sampling**

Basic concepts in sampling from finite populations; simple random sampling; stratified sampling; choice of sampling unit; cluster and systematic sampling; introduction to multistage sampling; ratio estimation; sampling with unequal probabilities and with replacement; replicated sampling; related topics.

Prerequisites: Mathematics 69.259★ and either 70.350 or 69.350, or permission of the Department.

Day division, Fall term: Lectures three hours a week.

**Mathematics 70.453★****Applied Multivariate Analysis**

Selected topics in regression and correlation non-linear models. Multivariate statistical methods, principal components, factor analysis, multivariate analysis of variance, discriminant analysis, canonical correlation, analysis of categorical data.

Prerequisites: Mathematics 70.355★, or 69.350 and 69.351, or permission of the Department.

Not offered 1986-87.

**Mathematics 70.456★****Non-Parametric Methods**

Order statistics; rank statistics; permutations; uniform distribution over the space of permutations; distribution of linear rank statistics; approximate normality of linear rank statistics; hypothesis of randomness; stochastic ordering; Wilcoxon test, median tests, Van Der Waerden test, Kolmogorov-Smirnov test; hypothesis of symmetry and random blocks; hypothesis of independence; treatment of ties; power and efficiency of rank tests.

Prerequisite: Mathematics 70.350 or permission of the Department.

Not offered 1986-87.

**Mathematics 70.457★****Statistical Inference**

Sufficient statistics, simple and composite hypotheses, most powerful and similar region test, distribution-free tests, confidence intervals, goodness-of-fit and likelihood ratio tests, large sample theory, Bayesian and likelihood methods, sequential tests.

Prerequisite: Mathematics 70.450★ or permission of the Department.

Day division, Winter term: Lectures three hours a week.

**Mathematics 70.458★****Stochastic Models**

Markov systems, stochastic networks, queueing networks, spatial processes, approximation methods in stochastic processes and queueing theory. Applications to the modelling and analysis of computer-communications systems and other distributed networks.

Prerequisite: Mathematics 70.356★ or permission of the Department.

Day division, Fall term: Lectures three hours a week.

**Mathematics 70.459★****Topics in Stochastic Optimization and Advanced Mathematical Modelling**

Topics chosen from: stochastic dynamic programming, Markov decision processes, search theory, sequential inference problems, optimal stopping, analysis and solution of deterministic and stochastic modelling problems in the physical, social and life sciences. Students will present a paper on applications of particular interest to them.

Prerequisites: Mathematics 70.260 (or 69.244★ and

69.265★); 69.257★; 70.356★, or permission of the Department.

Not offered 1986-87.

**Mathematics 70.470★****Partial Differential Equations**

First order linear, quasi-linear, and non-linear equations; second order equations in two and more variables; systems of equations; the wave equation; Laplace and Poisson equations, Dirichlet and Neumann problems; Green's functions.

Prerequisites: Mathematics 70.308★ and one of 70.302★ or 70.307★ or permission of the Department.

Not offered 1986-87.

**Mathematics 70.471★****Topics in Partial Differential Equations**

Theory of distributions, initial-value problems based on 2-dimensions wave equations, Laplace transform, Fourier integral transform, diffusion problems, Helmholtz equation with application to boundary and initial-value problems in cylindrical and spherical co-ordinates.

Prerequisites: Mathematics 70.308★ and one of 70.302★ or 70.307★ or permission of the Department.

Day division, Winter term: Lectures three hours a week.

**Mathematics 70.472★****Integral Transforms**

Laplace, Fourier, Hankel and Mellin transforms, selection of a suitable transform for a given partial differential equation boundary value problem. Operational properties of transforms. Inversion theorems. Approximate evaluation of inversion integrals for small and large values of parameter. Application to the solution of integral equations.

Prerequisite: Mathematics 70.307★ or permission of the Department.

Not offered 1986-87.

**Mathematics 70.473★****Qualitative Theory of Ordinary Differential Equations**

Ordinary differential equations: existence-uniqueness theorems, vector formulation for systems; stability theory, Lyapunov theorems, perturbation theorems and structural stability; Poincaré-Bendixon theory.

Prerequisites: Mathematics 70.301★, 70.308★, 70.346★.

Not offered 1986-87.

**Mathematics 70.482★****Introduction to Mathematical Logic**

Symbolic logic, propositional and predicate calculi, set theory and model theory, completeness.

Prerequisite: Mathematics 70.210 or permission of the Department.

Not offered 1986-87.

**Mathematics 70.483★****Computable Functions**

Recursive functions and computability, algorithms, Church's thesis, Turing machines, computational logic. (Also listed as Computer Science 95.483★.)

Prerequisite: Mathematics 70.210 or 70.385★ or permission of the Department.

Day division, Winter term: Lectures three hours a week.

**Mathematics 70.484★****Design and Analysis of Algorithms**

Design techniques: divide and conquer, back-tracking, dynamic programming, search methods. Algorithms for graph problems, optimization problems, algebraic problems. Lower bounds and the P-NP question. (Also listed

as Computer Science 95.484★.)

Prerequisite: Mathematics 69.384★ or permission of the Department.

Day division, Fall term: Lectures three hours a week.

Mathematics 70.485★

**Theory of Automata**

Finite automata and regular expressions, properties of regular sets, context-free grammars, pushdown automata, deterministic context-free languages. Turing machines, the Chomsky hierarchy. Undecidability, intractable problems. (Also listed as Computer Science 95.485★.)

Prerequisite: Mathematics 70.385★ or 70.310 or permission of the Department.

Day division, Fall term: Lectures three hours a week.

Mathematics 70.486★

**Numerical Linear Algebra**

Study of matrix inversion techniques; techniques of finding eigenvalues and eigenvectors, solution of systems of linear equations; direct and indirect methods, their comparison and error analysis; applications in optimization and other areas. (Also listed as Computer Science 95.486★.)

Prerequisites: Mathematics 69.217★; and Mathematics 69.309★ or permission of the Department.

Day division, Winter term: Lectures three hours a week.

Mathematics 70.487★

**Game Theory**

Two-person zero-sum games; infinite games; multistage games; differential games; utility theory; two-person general-sum games; bargaining problem; n-person games; games with a continuum of players.

Prerequisite: Mathematics 70.301★ or permission of the Department.

Not offered 1986-87.

Mathematics 70.488★

**Graph Theory and Algorithms**

Paths, circuits, Eulerian and Hamiltonian graphs, connectivity, colouring problems, matching, Ramsey theory, network flows.

Prerequisites: Mathematics 70.385★ or 70.310, or permission of the Department.

Day division, Winter term: Lectures three hours a week.

Mathematics 70.495★

**Honours Project**

Consists of a written report on some approved topic or topics in the field of mathematics, together with a short lecture on the report.

Prerequisite: Honours Mathematics students only, see p. 366.

Fall term.

Mathematics 70.496★

**Directed Studies**

Prerequisite: Honours Mathematics students only.

Fall and Winter terms.

Mathematics 70.497★

**Directed Studies**

Available only to Honours students whose program requires a half-credit not offered by the Department of Mathematics and Statistics.

Courses Planned for Summer School and Evening Division, 1987-89.

*Summer 1987*

69.006★, 69.007★, 69.107★, 69.109★, 69.117★, 69.119★, 69.201, 69.202, 69.207★, 69.217★, 69.257★, 69.304★, 69.375★.

*Evening 1987-88*

69.006★, 69.007★, 69.107★, 69.109★, 69.117★, 69.119★, 69.207★, 69.208★, 69.217★, 69.218★, 69.257★, 69.311★.

*Summer 1988*

69.006★, 69.007★, 69.107★, 69.109★, 69.117★, 69.119★, 69.201, 69.202, 69.207★, 69.217★, 69.257★, 69.304★, 69.375★.

*Evening 1988-89*

69.006★, 69.007★, 69.107★, 69.109★, 69.117★, 69.119★, 69.207★, 69.208★, 69.217★, 69.218★, 69.257★, 69.311★, 69.387★.



## Program Co-ordinator

I. Pressman  
Department of Mathematics and Statistics  
Room 823 Arts Tower

## General Information

This program leads to either a B.A. or B.Sc. Honours degree.

Operations Research is the generic name given to a wide range of activities associated with planning and decision-making. The techniques used are many and varied. They include mathematical modelling, optimization, statistical analysis, stochastic processes and computer simulation.

This career-oriented program, while giving a strong base in the above techniques, exposes the student to various applications, including economics and management studies.

The program at Carleton will appeal to students who are good in mathematics and who are interested in computing and the application of mathematical techniques to real-life situations. Graduates of the program will also receive the "Diploma in Operations Research" from the Canadian Operational Research Society and will be prepared for positions in a wide variety of industrial and governmental organizations; they will also be qualified to continue in a graduate program in Operations Research.

## Admission Requirements

The admission requirements for this program are the same as those specified for the B.A. Honours program (see p. 88) and the B.Sc. Honours program (see p. 328).

## Course Requirements

A total of 20 credits is required in accordance with the conditions given below. All course selections must be approved by the Department of Mathematics and Statistics.

Students in the B.Sc. program must include a First-year experimental science in their First-year course selection.

1. Mathematics 69.102, 69.112 with an average grade of C+ or better.

Alternatively, students may be admitted to the Honours program in Operations Research after successful completion of First year with:

(a) a minimum grade-point average of 7.0 (B-) on all half credits offered from Mathematics 69.107★, 69.207★, 69.117★, 69.217★; and

(b) a minimum weighted grade-point average of 6.0 (C+) on all credits offered from Mathematics 69.102, 69.107★, 69.207★, 69.112, 69.117★, 69.217★.

### Note:

Students offering Mathematics 69.107★ must then take 69.207★, and students offering 69.117★ must then take 69.217★.

2. Mathematics 70.200, 70.260, 69.257★, 69.259★;

3. Mathematics 70.210, 70.350, 70.356★, 69.381★, 69.386★, 69.387★;

4. Mathematics 70.355★, 70.459★, 70.495★; Mathematics 70.583★ or Economics 43.405★;

5. two introductory half-credits in Computer Science (preferably 95.105★, 95.106★) and Business 42.337★, Engineering 94.405★;

6. five approved credits in applied areas. At least two and one-half of these must be in the fields of Economics and Management Studies. The following list includes a few of the many suitable applications-oriented courses. Other possibilities as well as various "paths" are given in the brochure, *A Guide to Careers in Operations Research*, available from the Department of Mathematics and Statistics.

### Business

42.101★ Principles of Financial Accounting

42.102★ Management Accounting

42.214★ Introduction to Management

42.240★ Business Information Systems

42.308★ Cost Accounting

42.342★ Business Systems I

42.348★ Quantitative Applications of Computers in Business

42.446★ Decision Support Systems

### Economics

43.100 Introduction to Economics

43.201★ Introduction to Microeconomic Theory and Analysis

43.211★ Introduction to Macroeconomic Theory and Analysis

43.250★ Introduction to Business Finance

43.365★ The Economics of Planning

43.485 Introduction to Econometrics

### Geography

45.340★ The Location of Industry and Public Services

45.341★ Geographical Analysis of Regional Economies

45.442★ Transportation Geography

45.443★ Issues in Applied Economic Geography

### Psychology

49.210★ Introduction to Social Psychology

### Sociology

53.251★ Introduction to Population Studies

56.253★ Introduction to Human Ecology

53.346★ Industrial Sociology

53.355 Bureaucracy and Society

### Philosophy

32.284★ Society, Value and Technology

### Technology, Society, Environment Studies

59.402★ Technology and Society: Forecasting

### Engineering

82.333★ Urban Planning

82.434★ Transportation

7. The remaining two credits may be chosen from any department, subject only to the restrictions that:

(a) of the total of 20 credits, not more than seven may be below the 200 level; and

(b) Science students must include at least one half-credit additional Science Continuation course. Thus the student may wish to take more applications-oriented

courses, so as to in effect have a specialty, or may take more courses in mathematics and statistics or computer science. Students in the B.Sc. program must take two Arts or Social Science elective credits, and should note the statement concerning Social Science Electives, as outlined on p. 330.



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## Officers of Instruction

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### Chairman

L.A. Copley

### Professors

D.J. Brown

R.K. Carnegie

R.L. Clarke

L.A. Copley

K.W. Edwards

D. Kessler

W.J. Romo

M.K. Sundaresan

P.J.S. Watson

### Visiting Professor

G. Herzberg

### Associate Professors

J.C. Armitage

A.L. Carter

J.E. Hardy

L. Resnick

### Research Scientists

P. Estabrooks

R.J. Hemingway

P. Mattig

### Research Associates

G. Giles

P. Kalyniak

A. McPherson

J. Pinfold

J. Waterhouse

### Instructors

J.-G. Boutin

D. Menagh

### Adjunct Professors

A.J. Alcock, *National Research Council*

P. Estabrooks, *Institute of Particle Physics*

C.K. Hargrove, *National Research Council*

R.J. Hemingway, *Institute of Particle Physics*

H. Mes, *National Research Council*

### Sessional Lecturers

L. Avery

D. Lamb

R. Lawford

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## General Information

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Students taking a single course in Physics should take Physics 75.010 or 75.105. Students taking more than one course in Physics should take Physics 75.100.

Prerequisites for entry into Second-year courses are normally Physics 75.100, and Mathematics 69.107★ and 69.117★. Mathematics 69.102 and 69.112 may be taken instead. Subject to the recommendation of the Major department and the approval of the Department of Physics, other combinations of one of Physics 75.100 or 75.105 and Mathematics may be offered. Prerequisites for the Third-year courses will normally be Physics 75.211★, 75.222★ and 75.235★.

The *Physics of Modern Technology* option, described below in detail, is a program that may be of particular interest to students wishing to study physics from an applied point of view and choosing careers in industry. For students entering this option, possibilities of combining studies in certain academic terms together with work in industry in other terms will be strongly explored.

Part-time students are accepted in the Department. Such students should consult with the department for full details of the available programs.

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## Graduation Regulations

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In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 332-333), in addition to all departmental regulations and requirements as set out below.

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## Major Program

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Fifteen credits as follows:

1. two acceptable Arts or Social Science credits;
2. one free optional credit;
3. twelve more credits chosen with the approval of the Department.

A typical pattern:

### First Year

Physics 75.100;

Chemistry 65.100;

Mathematics 69.107★ and 69.117★;

One of Biology 61.100 or 61.101, Geology 67.100, or two half credits in Computer Science, or Mathematics 69.102 and 69.112 taken in place of Mathematics 69.107★ and 69.117★.

One acceptable Arts or Social Science credit.

### Second Year

Physics 75.211★, 75.222★, 75.235★, 75.236★;

Mathematics 69.201, 69.217★;

One half credit in Physics, Mathematics, Computer Science or Engineering;

One acceptable Arts or Social Science credit or a free option.

### Third Year

Physics 75.300 or 75.307★ or 75.308★, 75.361★, 75.362★, 75.338★, 75.342★;

Mathematics 69.375★, 69.376★;

If Physics 75.300 is not taken, one half credit in Physics, Mathematics, Computer Science or Engineering;

One acceptable Arts or Social Science credit or a free option.

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## Honours Programs

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Twenty credits as follows:

1. two acceptable Arts or Social Science credits;
2. one free option credit;
3. seventeen more credits chosen with the approval of the Department.

## Experimental Options

### First Year

As for the Major program above or:

Physics 75.100;  
Chemistry 65.100;  
Mathematics 69.102, 69.112;  
One acceptable Arts or Social Science credit.

### Second Year

Physics 75.211★, 75.222★, 75.235★, 75.236★;  
Mathematics 69.257★ or Computer Science 95.103★;  
Either (a) if Mathematics 69.107★, 69.117★ were taken in First year, Mathematics 69.201 and 69.217★; or  
(b) if Mathematics 69.102, 69.112 were taken in First year, Mathematics 69.208★, 69.244★ and one half credit chosen from Physics, Mathematics, Computer Science or Engineering;  
One acceptable Arts or Social Science credit or a free option.

### Third Year

Physics 75.300, 75.338★, 75.342★, 75.361★, 75.362★, 75.381★, 75.386;  
One half credit in Physics, Mathematics, Computer Science or Engineering or one half an acceptable Arts or Social Science credit or a one half credit free option.

### Fourth Year

Physics 75.400 (students doing laboratory work in other departments may be allowed to register in Physics 75.407★ or 75.408★);  
Physics 75.437★, 75.477★, 75.478★;  
Physics 75.458★ or 75.462★ or 75.468★;  
Physics 75.499 or 75.497★ or 75.498★;  
One acceptable Arts or Social Science credit or a free option;  
Sufficient credits in Physics, Mathematics, Computer Science or Engineering to bring the total to five credits.

## Physics of Modern Technology Option

The typical course requirements for this option are indicated below.

### First Year

Physics 75.100;  
One of Chemistry 65.100, Geology 67.100 or Biology 61.100;  
Mathematics 69.107★, 69.117★;  
Computer Science 95.103★ or 95.105★ and 95.102★ or 95.106★; (95.105★ is recommended only for students who already have a good knowledge of FORTRAN; 95.102★ and 95.106★ are prerequisites for different subsets of higher level courses in Computer Science);  
One acceptable Arts or Social Science credit.

### Second Year

Physics 75.211★, 75.222★, 75.235★, 75.236★;  
Mathematics 69.201, 69.217★;  
One half credit free option;  
One acceptable Arts or Social Science credit.

### Third Year

Physics 75.300, 75.335★, 75.338★, 75.342★, 75.361★, 75.362★, 75.386;  
One half credit free option.

### Fourth Year

Physics 75.400, 75.424★, 75.427★, 75.437★, 75.458★, 75.499;  
One credit chosen from Physics, Mathematics, Computer Science or Engineering.

### Note:

Particularly recommended courses in Computer Science and Engineering are Computer Science 95.206★ and Engineering 94.303★.

In this option, the work in the Physics 75.300 and 75.400 laboratories will emphasize experiments and project work of interest to the high-technology industries. The main areas emphasized in the advanced laboratories will be: modern electronics, digital techniques and methods, use of computers in the control and analysis of experiments, modern optics, ultrasound, and sensing and imaging problems. In Physics 75.499 students will work on projects from lists composed from typical technological projects encountered frequently in industries.

## Theoretical Option

### First Year

Physics 75.100;  
Chemistry 65.100;  
Mathematics 69.102, 69.112;  
One acceptable Arts or Social Science credit.

### Second Year

Physics 75.211★, 75.222★, 75.235★, 75.236★;  
Mathematics 69.208★, 69.244★, 69.257★ or Computer Science 95.103★;  
The equivalent of one half credit chosen from Physics, Mathematics, Computer Science or Engineering;  
One acceptable Arts or Social Science credit or a free option.

### Third Year

Physics 75.307★ or 75.308★;  
Physics 75.338★, 75.342★, 75.361★, 75.362★, 75.381★, 75.386;  
The equivalent of one credit chosen from Physics, Mathematics, Computer Science, Engineering or one acceptable Arts or Social Science credit or a free option.

### Fourth Year

Physics 75.407★ or 75.408★;  
Physics 75.437★, 75.447★, 75.477★, 75.478★;  
Physics 75.497★ or 75.498★ or 75.499;  
One acceptable Arts or Social Science credit or a free option;  
Sufficient credits in Physics, Mathematics, Computer Science or Engineering to bring the total to five credits.

## Combined Honours in Geology and Physics

A grade of C+ or better in both Geology 67.100 and Physics 75.100, and overall Honours standing are required before admittance to the program.

Course requirements are as follows:

### First Year

Physics 75.100;  
Geology 67.100;  
Mathematics 69.107★ and 69.117★;  
Chemistry 65.100;  
One Arts or Social Science credit.



*Second Year*

Physics 75.211★, 75.222★, 75.235★, 75.236★;  
Geology 67.221★, 67.222★, 67.228★, 67.281★;  
Mathematics 69.202;  
Field camp.

*Third and Fourth Years*

Three credits in physics (not including the Honours Thesis), which must include one credit in the Third-year laboratory and at least a half credit at the 400 level;  
Three credits in Geology (not including the Honours Thesis) chosen from Geology 67.323★, 67.324★, 67.333★, 67.334★, 67.381★, 67.382★ and available Fourth-year courses. At least a half credit at the 400 level is required, for which Geology 67.481★ is strongly recommended. (Students should take careful note of course prerequisites when making their selection);  
Two optional credits (one credit in Computer Science is recommended);  
One Arts or Social Science credit;  
Honours Thesis (Physics 75.499 or Geology 67.498).

A reading proficiency in French, German or Russian must be demonstrated by the end of the Third year. The thesis must be presented and defended before an inter-departmental committee.

**Combined Honours in Physics and Computer Science**

The program offers the student the possibility of obtaining skills for tackling problems of an applied nature such as those encountered in the high technology industries. Because students in this program will develop a strong background in physics and related mathematics, they are most likely to have the skills that will be in high demand in the next decade in a variety of areas. Students in this program follow a prescribed Combined Honours B.Sc. program which features equal emphasis on physics and computer science.

The program is administered by the Committee on Combined Programs with Computer Science (CCPCS); the Committee consists of representatives from the School of Computer Science, the Department of Physics, and the Department of Mathematics and Statistics.

Enrolment in this program is limited. Applicants should note that meeting the minimum published requirements for admission to this program does not imply automatic acceptance.

New students to Carleton should contact the Office of Admissions; students already at Carleton should apply through their Faculty Registrar's Office.

Applications for admission to this program will only be processed by the Committee during the periods mid-May to mid-June, and mid-August to mid-September of each year.

To continue in the program, a student must:

1. by the end of August each year, have gained at least one half credit in the past 12 months towards the degree requirements, and
2. have accumulated a grade-point average of 6.5 or better in each of Computer Science and Physics and a grade-point average of 5.0 or better overall. (Grade-point averages include any failing grades that have not yet been replaced by a passing grade in the same or a substitute course.)

Failure to comply with these standards requires withdrawal from the program.

*Note:*

Some courses offered by the School of Business and the Department of Systems and Computer Engineering may be taken for credit as Computer Science courses in this program. For a complete list of these courses see pp. 69-70.

Course requirements are as follows:

*First Year*

Physics 75.100;  
Computer Science 95.105★, 95.106★, 95.102★;  
Mathematics 69.107★, 69.117★, 69.207★;  
One Arts or Social Science credit or a free optional credit; (students wishing to leave open the possibility of transferring to an alternative science program after completing First year are advised to use this free option to take one of Chemistry 65.100, Biology 61.100 or 61.101, Geology 67.100).

*Second Year*

Physics 75.211★, 75.222★, 75.235★, 75.236★;  
Computer Science 95.202★, 95.203★, 95.204★;  
Mathematics 69.208★, 69.217★;  
One half credit in Arts or Social Sciences.

*Third Year*

Physics 75.307★ or 75.308★;  
Physics 75.338★, 75.361★, 75.362★, 75.386;  
Three of Computer Science 95.300★, 95.305★, 95.384★, 95.386★;  
Engineering 94.303★.

*Note:*

All students must complete all four of Computer Science 95.300★, 95.305★, 95.384★ and 95.386★ by the end of the Fourth year.

*Fourth Year*

One of Physics 75.407★ or 75.477★;  
Physics 75.437★;  
One of Physics 75.497★ or 75.498★ or Computer Science 95.495★;  
Two half credits in Computer Science at the 200 level or above;  
Two half credits in Computer Science at the 300 level or above;  
Either one half credit in Arts or Social Sciences plus a free optional credit or one and one half credits in Arts or Social Sciences, depending on the choice made in First year.

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**Double Honours Program: B.Sc. Honours**

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**Mathematics and Physics**

This program requires a minimum of 21½ credits including 18½ credits in Mathematics and Physics.

*Entrance Criteria*

Successful completion of First year with a B+ or better in Mathematics 69.102, 69.112 and Physics 75.100, or permission of both departments.

*Course Requirements**First Year*

1. Mathematics 69.102, 69.112;
2. Physics 75.100;

3. Chemistry 65.100 or Biology 61.100;
4. One Arts or Social Science elective credit.

*Note:*

It is highly recommended that Computer Science 95.103★ be taken in the First year in addition to the foregoing courses. When this course is taken for credit, it will be included in the calculation of the overall grade-point average.

*Second Year*

1. Mathematics 70.200, 70.210, 70.260;
2. Physics 75.211★, 75.222★, 75.235★, 75.342★;
3. One half credit Arts or Social Science elective.

*Third Year*

1. Mathematics 70.301★, 70.302★, 70.310;
2. Physics 75.307★, 75.338★, 75.361★, 75.362★, 75.381★;
3. A half credit in Mathematics or Physics at the 300 level;
4. Mathematics 70.307★ together with Physics 75.388★, or Physics 75.386.

*Fourth Year*

1. One Mathematics credit at the 400 level (or equivalent);
2. Physics 75.437★, 75.447★, 75.477★, 75.478★;
3. Two half credits at the 300 or 400 level in Mathematics or Physics;
4. Honours project in Mathematics or Physics (half credit);
5. One half credit Arts or Social Science elective.

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**Graduate Program**

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Candidates for the Doctor's and Master's degrees are accepted for full-time work in Physics under the supervision of members of the Department. The requirements and general regulations are given in the Graduate Studies and Research Calendar.

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**Courses Offered**

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Physics 75.010

**Pre-University Physics**

Day division: Lectures three hours a week, laboratory, demonstrations and problems three hours a week.

Physics 75.100

**Introductory Physics**

This course introduces mechanics, the properties of matter, thermodynamics, electricity and magnetism, as well as some aspects of wave motion, optics and modern physics. A balance is maintained between depth and range.

Prerequisites: Mathematics 69.006★ and 69.007★ or equivalent, Physics 75.010 or equivalent, or permission of the Department. Students must at least be concurrently registered in Mathematics 69.107★.

Day and Evening divisions: Lectures three hours a week, laboratory three hours a week.

Physics 75.105

**Introductory Physics**

An alternative First-year course for students who do not intend to take additional courses in Physics. The subject areas listed for Physics 75.100 are also covered here, but

with greater breadth and less depth. Modern applications are presented.

Prerequisites: Mathematics 69.006★ and 69.007★ or equivalent, and Physics 75.010 or equivalent is desirable; or permission of the Department. Students must at least be concurrently registered in Mathematics 69.107★.

Day division: Lectures three hours a week, laboratory three hours a week.

Physics 75.190

**Introduction to Astronomy**

A survey course in astronomy, astrophysics and cosmology, giving a descriptive treatment of the known stellar, galactic and extra-galactic systems. A review of the modern ideas concerning the structure, origin and evolution of the universe. Fields of current interest in astronomy, including the study of quasars, pulsars and supernovae are discussed. Additional topics include the development of space-age astronomy and studies of the possible existence of extraterrestrial life. A 14-inch telescope is available for student use.

Evening division: Two one-and-a-half hour lectures a week.

Physics 75.195

**Physics of Music**

The physics of musical phenomena. Sound production, propagation, frequency, intensity. Characteristics of musical sounds, pitch, harmonics, attack. Musical instruments, qualities and behaviours, organ, piano, strings, brass, etc. The ear, physiology, behaviour, limitations. Building acoustics. Electronic recording, reproduction and production of music. Primarily for non-Science Majors and Honours students.

Prerequisite: Permission of the Department. Some knowledge of either music and musical notation, or elementary physics is desirable.

Not offered 1986-87.

Physics 75.211★

**Mechanics and Properties of Matter**

Classical mechanics of a particle and rigid body. Classical properties of matter. Relativistic mechanics.

Prerequisites: Physics 75.100, Mathematics 69.107★, and 69.117★ or 69.127★ or Mathematics 69.102 and 69.112. (Physics 75.105 is also acceptable provided a minimum grade of B- is obtained.)

Day division, Fall term: Lectures three hours a week, laboratory three hours a week.

Physics 75.220

**Introduction to Astrophysics**

This is a self-contained course intended as an introduction to modern astronomy and astrophysics for students with prior knowledge of introductory physics. Various topics such as spectroscopy and elementary nuclear physics are introduced and applied to astrophysical problems such as stellar structure and evolution. Topics of current interest, including pulsars, quasars and black holes are discussed. The last part introduces modern cosmology and discusses the observations on the universe that have led to the "big-bang" picture of its origin. There is normally some observational work associated with the course.

Prerequisite: Physics 75.100 or 75.105 or permission of the Department.

Evening division: Two one-and-a-half hour lectures a week.



**Physics 75.222★****Wave Motion and Optics**

Physical optics based on electromagnetic theory, oscillator model for dispersion, absorption, scattering, Huygen's principle, reflection and transmission as coherent scattering. Interference, coherence length, diffraction, polarization, double refraction. Geometrical optics.

Prerequisites: Physics 75.100, Mathematics 69.107★ and 69.117★ or Mathematics 69.102 and 69.112. (Physics 75.105 is also acceptable provided a minimum grade of B- is obtained.)

Day division, Winter term: Lectures three hours a week, laboratory three hours a week.

**Physics 75.235★****Electricity and Magnetism**

The theory of electric and magnetic fields is covered in some detail. Electrostatics, field intensities in various configurations of charges, Gauss' law, electrostatic energy. Dielectric materials, dipoles, dipole-dipole interaction, molecular polarizability. Steady currents, properties of electrical conductors. Magnetic effects of currents and motion of charges in electric and magnetic fields. Time varying currents, electromagnetic induction. Magnetic materials and magnetic measurements. D.C. and A.C. circuit theory. Resonant circuits.

Prerequisites: Physics 75.100, Mathematics 69.107★, and 69.117 or 69.102 and 69.112 (Physics 75.105 is also acceptable provided a minimum grade of B- is obtained). Day division, Fall term: Lectures three hours a week, laboratory three hours a week.

**Physics 75.236★****Physics of Electrical and Electronic Measurements I**

Basic measuring devices, the oscilloscope; impedances, bandwidth, noise; vacuum tubes, transistors, useful approximations for circuit design; feedback, amplifier, oscillator; operational circuits; digital circuits and measuring devices. Lectures emphasize the physical basis and useful approaches to instrument use and design. Laboratory emphasizes modern digital instrumentation.

Prerequisite: Physics 75.235★.

Day division, Winter term: Lectures three hours a week, laboratory three hours a week.

**Physics 75.291★****Physics of the Environment I**

The study of physics is essential to the understanding of many contemporary environmental problems. This course examines energy transformations which directly or indirectly are the sources of much pollution. Among the topics considered are the use of fossil, bio-mass, solar and nuclear-energy sources; thermodynamical and practical limits to efficiency; thermal pollution; radioactivity and the effects of radiation; growth in energy use and estimates of reserves; the need for conservation and control.

Prerequisite: Physics 75.100 or 75.105 or permission of the Department.

Evening division, Fall term: Lectures three hours a week.

**Physics 75.292★****Physics of the Environment II**

This course can be taken as a continuation of Physics 75.291★ or independently. It carries forward the study of the relationship of physical principles to environmental problems. Topics considered include: air pollution, its measurement, abatement and possible effects on climate; transportation problems and alternatives; noise pollution,

its measurement and possible consequences; communication.

Prerequisite: Physics 75.100 or 75.105 or permission of the Department.

Evening division, Winter term: Lectures three hours a week.

**Physics 75.300****Third-Year Laboratory**

The student is expected to complete a small number of projects. These are closely supervised at the beginning of the year, but the student is encouraged to become as independent as possible. Some of the fields for which apparatus is available are: physical optics, optical spectroscopy, electronics, digital techniques, nuclear spectroscopy, cosmic rays, microwaves, solid state phenomena, electrical measurements. Laboratory Techniques: Basic technical operations (mechanical, electronics, etc.) used in the design and construction of research apparatus. Students with satisfactory competence in shop techniques may be excused from this part of the course.

Prerequisite: Permission of the Department.

Day division: Laboratory and seminar six hours a week, workshop three hours a week.

**Physics 75.301★****Advanced Physics Laboratory for Non-Physics Science Students**

This course is designed to initiate students into the use of instrumentation and help them understand the physical principles involved in making key measurements. In consultation with an adviser from the student's Major department, the instructor of this course will endeavour to design the program to meet the needs of each student. Available apparatus as in Physics 75.300.

Prerequisite: Permission of the Department.

Day division, Fall term: Laboratory and seminar six hours a week.

**Physics 75.302★****Advanced Physics Laboratory for Non-Physics Science Students**

This course is designed to initiate students into the use of instrumentation and help them understand the physical principles involved in making key measurements. In consultation with an adviser from the student's Major department, the instructor of this course will endeavour to design the program to meet the needs of each student. Available apparatus as in Physics 75.300.

Prerequisite: Permission of the Department.

Day division, Winter term: Laboratory and seminar six hours a week.

**Physics 75.307★****Selected Experiments from Physics 75.300**

Prerequisite: Permission of the Department.

Day division, Fall term: Laboratory and seminar six hours a week.

**Physics 75.308★****Selected Experiments from Physics 75.300**

Prerequisite: Permission of the Department.

Day division, Winter term: Laboratory and seminar six hours a week.

**Physics 75.335★****Physics of Electrical and Electronic Measurements II**

Analysis of a selection of currently important electronic devices using such concepts as Fourier analysis, noise, the transmission line: lock-in amplifier, analog to digital

converter, charge sensitive detector, etc. Interfacing and programming small computers. The physical basis of operation and of limitations are emphasized.

Prerequisite: Physics 75.236★ or permission of the Department.

Day division, Fall term: Lectures three hours a week.

#### Physics 75.338★

##### **Electromagnetism**

Vector notation, vector algebra, divergence and Stokes' theorems, the Laplacian, electrostatic field and magnetostatics. Examples involving Laplace's and Poisson's equations; vector potential; Faraday's laws of induction; Maxwell's equations. Propagation of plane electromagnetic waves in vacuum and dielectric media.

Prerequisite: Physics 75.235★ or permission of the Department.

Text: Lorrain and Corson, *Electromagnetic Fields and Waves*, Second Edition.

Day division, Winter term: Three hours a week.

#### Physics 75.342★

##### **Heat and Thermodynamics**

Heat and kinetic theory, methods of thermodynamics and applications of laws of thermodynamics.

Prerequisites: Physics 75.100 (Physics 75.105 is also acceptable provided a minimum grade of B- is obtained), Mathematics 69.107★, and 69.117★, or 69.102 and 69.112.

Day division, Winter term: Lectures three hours a week.

#### Physics 75.361★

##### **Modern Physics**

The course is designed to provide a logical transition from classical to modern physics. Elements of special relativity. Kinetic theory of gases; determination of the mass and charge of subatomic particles. Rutherford scattering, atomic models. Failure of classical mechanics. Photoelectric effect and Compton scattering. Bohr's theory of the hydrogen atom. Atomic energy states, optical and X-ray spectra. X-ray scattering and diffraction. Elements of nuclear physics and particle physics.

Prerequisites: Physics 75.211★, 75.222★, 75.235★, Mathematics 69.207★, 69.208★, 69.217★ or Mathematics 69.202, 69.217★, or permission of the Department.

Day division, Fall term: Lectures three hours a week.

#### Physics 75.362★

##### **Elements of Quantum Mechanics**

Analysis of interference experiments with waves and particles; fundamental concepts of quantum mechanics, Schrodinger equation; angular momentum, atomic beams; hydrogen atom; atomic and molecular spectroscopy; Pauli principle; simple applications in the physics of elementary particles.

Prerequisite: Physics 75.361★ or permission of the Department.

Day division, Winter term: Lectures three hours a week.

#### Physics 75.364★

##### **Modern Physics**

This course is designed primarily for engineering students and for students not majoring in physics. Rapid review of classical physics; special relativity. Particle aspects of electromagnetic radiation. Wave aspects of material particles. Atomic structure. Production of X-rays and X-ray spectra. Molecular binding, solid state physics; nuclear physics. Applications; fission and fusion reactors, coherent optics (lasers, etc.) and semi-conductors. Brief description of cosmic rays and elementary particle physics.

Prerequisites: Physics 75.100 or 75.233★ and Mathematics 69.201 or permission of the Department.

Not offered 1986-87.

#### Physics 75.381★

##### **Mathematical Physics I**

Vector calculus; curvilinear coordinates; irrotational, solenoidal vector field; theorems of Gauss, Stokes; introductory fluid mechanics. Introduction to Lagrangian and Hamiltonian mechanics; Poisson brackets, tensors and dyadics; rigid body rotations; coupled systems and normal coordinates; relativistic dynamics.

Prerequisites: Physics 75.211★, 75.222★, 75.235★, Mathematics 69.207★, 69.208★, 69.217★ or permission of the Department.

Day division, Fall term: Lectures three hours a week.

#### Physics 75.386

##### **Introduction to Theoretical Physics**

Theoretical techniques common to all branches of modern physics are introduced. Particular emphasis is placed on methods used in quantum mechanics with problems selected from wave propagation, electromagnetic theory, scattering theory and reactor physics. These include Fourier series and integrals, elementary generalized functions, contour integration, residue calculus, Fourier and Laplace transforms, methods for solving linear ordinary and partial differential equations, and Green's functions.

Prerequisites: Physics 75.211★, 75.222★, 75.235★, Mathematics 69.207★, 69.208★, 69.217★ or permission of the Department.

Day division: Lectures three hours a week.

#### Physics 75.388★

##### **Mathematical Physics II**

Linear differential equations of second order. Fourier series and integrals, elementary generalized functions; Fourier and Laplace transforms; Green's functions, with applications; boundary value problems.

Prerequisites: Physics 75.381★ or Mathematics 69.345 or 70.345 (may be taken concurrently); Mathematics 69.307★, or permission of the Department.

Day division, Winter term: Lectures three hours a week.

#### Physics 75.400

##### **Fourth-Year Laboratory**

The student is expected to complete detailed projects involving some original planning both in concept and experimental technique. Projects are similar to Physics 75.300 but are of a more sophisticated nature.

Prerequisite: Physics 75.300 or 75.307★ or 75.308★.

Day division: Laboratory and seminar six hours a week.

#### Physics 75.407★

##### **Selected Experiments from Physics 75.400**

Prerequisite: Physics 75.300 or 75.307★ or 75.308★.

Day division, Fall term: Laboratory and seminar six hours a week.

#### Physics 75.408★

##### **Selected Experiments from Physics 75.400**

Prerequisite: Physics 75.300 or 75.307★ or 75.308★.

Day division, Winter term: Laboratory and seminar six hours a week.

#### Physics 75.421★

##### **Topics in Astrophysics and Cosmology**

Stellar evolution, including, in particular, stellar modelling, main sequence stars, red giants and the end states of stars. Introduction to general relativity, black holes and



related phenomena, big bang cosmology.

Prerequisites: Physics 75.220, 75.361★ and 75.362★ or permission of the Department.

Evening division, Fall term: Lectures three hours a week.

Physics 75.424★

#### **Physics of Sensing and Imaging**

Introduction to the physical basis of a selection of sensing devices. Particular attention is paid to common features such as noise, bandwidth, sensitivity and quantum limitations. Examples are chosen from radar, remote sensing, geophysical techniques of gravitational and magnetic surveys, ultrasound and its use in medical imaging, computer tomography, NMR imaging. The fundamentals of photography and electronic imaging are also covered.

Prerequisite: Permission of the Department.

Day division, Winter term: Lectures three hours a week.

Physics 75.427★

#### **Modern Optics**

Diffraction theory, coherence, Fourier optics, spatial filtering; holography and its applications; laser theory: stimulated emission, cavity optics, modes; gain and bandwidth; design and characteristics of atomic and molecular gas lasers.

Prerequisites: Physics 75.361★ and 75.362★ or permission of the Department.

Day division, Fall term: Lectures three hours a week.

Physics 75.437★

#### **Electromagnetic Radiation**

Electromagnetic wave propagation in a vacuum, dielectrics, conductors, and ionized gases, reflection, refraction, polarization at the plane boundary between two media; waveguide and transmission line propagation; dipole and quadrupole radiation fields; antenna systems. Electromagnetic mass, radiation pressure. Tensor notation, transformation of the electromagnetic fields.

Prerequisites: Physics 75.338★, 75.381★ and 75.386 (except for Mathematics and Physics Double Honours students), or permission of the Department.

Text: Lorrain and Corson, *Electromagnetic Fields and Waves, Second Edition*.

Day division, Fall term: Lectures three hours a week.

Physics 75.447★

#### **Statistical Physics**

Equilibrium statistical mechanics and its relation to thermodynamics. Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac statistics are derived, and applied in appropriate physical situations. Fluctuations. Kinetics and transport processes, including the Boltzmann transport equation and some of its applications.

Prerequisites: Physics 75.342★, 75.361★, 75.362★ and 75.477★ to be taken concurrently, or permission of the Department.

Day division, Fall term: Lectures three hours a week.

Physics 75.458★

#### **Solid State Physics**

An introduction to solid state physics. Topics to include crystal structure, phonons and lattice vibrations, conductors, semiconductors, insulators and superconductivity.

Prerequisites: Physics 75.361★ and 75.362★ or permission of the Department.

Day division, Winter term: Lectures three hours a week.

Physics 75.462★

#### **Particle Physics**

Properties of leptons, quarks and hadrons. The fundamental interactions, conservation laws, invariance principles and quantum numbers. Resonances in hadron-hadron interactions. Three body phase space. Dalitz plots. Quark model of hadrons, mass formulae. Weak interactions, parity violation, decay and neutral kaons, CP violation, Cabibbo theory.

Prerequisite: Physics 75.477★ or permission of the Department.

Day division, Winter term: Lectures three hours a week.

Physics 75.468★

#### **Nuclear Physics**

Ground state properties of nuclei, nuclear forces, nuclear levels. Qualitative treatment of Fermi gas model, liquid drop model, shell model and collective model. Alpha, beta and gamma radioactivities. Fission. Passage of particles through matter. Particle detectors. Elements of neutron physics and nuclear reactors.

Prerequisites: Physics 75.361★ and 75.362★ or permission of the Department.

Day division, Winter term: Lectures three hours a week.

Physics 75.477★

#### **Introduction to Quantum Mechanics I**

This course concentrates mainly on the basic interpretative postulates of quantum mechanics. These fundamental concepts are applied to simple one-dimensional problems, and angular momentum theory.

Prerequisites: Physics 75.362★, 75.386 or permission of the Department.

Day division, Fall term: Lectures three hours a week.

Physics 75.478★

#### **Introduction to Quantum Mechanics II**

Scattering theory and application; bound state problems; approximation methods.

Prerequisite: Physics 75.477★ or permission of the Department.

Day division, Winter term: Lectures three hours a week.

Physics 75.481★

#### **Diffusion and Flow Phenomena**

Continuity equation; flow equations; diffusion of thermal neutrons (collisional energy transfer, scattering probability, statistical energy degradation); Fermi age-velocity theory; fast neutron flow equation; thermal multiplication pile; criticality criteria; solutions of flow and continuity equations: neutron flow (moderation by graphite block). Also given as Physics 75.553★ (Reactor Physics I).

Prerequisites: Physics 75.381★, 75.386 or permission of the Department.

Not offered 1986-87.

Physics 75.497★

#### **Fourth-Year Project**

Same as Physics 75.499 except that it extends over the Fall term only. (See Physics 75.499 for details.)

Prerequisite: Permission of the Department.

Day division, Fall term: A minimum of six hours laboratory or private study a week.

Physics 75.498★

#### **Fourth-Year Project**

Same as Physics 75.499 except that it extends over the Winter term only. (See Physics 75.499 for details.)

Prerequisite: Permission of the Department.

Day division, Winter term: A minimum of six hours laboratory or private study a week.

Physics 75.499

**Fourth-Year Project**

These are advanced projects of an experimental or theoretical nature with an orientation towards research. A written progress report, by mid-term for Physics 75.497★, 75.498★, and by mid-year for Physics 75.499, must be submitted to the student's supervisor prior to the last day for withdrawal from the course. A written and an oral report will be required at the conclusion of the project.

Prerequisite: Permission of the Department.

Day division: A minimum of six hours laboratory or private study a week.



## B.Sc. Honours in Psychology

The Department of Psychology offers a program leading to the Honours Bachelor of Science degree. Full details of the Department's offerings may be found in the Faculty of Social Sciences section of the Calendar beginning on p. 227. Required courses for the B.Sc. with Honours in Psychology, in the sequence in which it is strongly suggested they be taken, are as follows:

### First Year

1. Mathematics 69.107★ and 69.117★ (or equivalent);
2. two of Biology 61.100 or 61.101, Chemistry 65.100, Physics 75.100 or 75.105;
3. Psychology 49.100 as the Social Science elective;
4. one additional credit from Science, Social Sciences or Arts.

Required courses beyond First year, and the sequence in which it is strongly suggested they be taken, are as follows:

### Second Year

1. Psychology 49.200 and two of 49.220★, 49.250★ and 49.270★;
2. Mathematics 69.257★ and 69.259★, or 69.217★ and 69.257★;
3. one credit from Arts or Social Sciences other than Psychology;
4. one optional credit.

### Note:

Students who wish to substitute Psychology 49.300 in 2 must offer in 4 a credit above the First-year level in Biology, Mathematics, Chemistry or Physics chosen with the approval of the Department of Psychology.

### Third Year

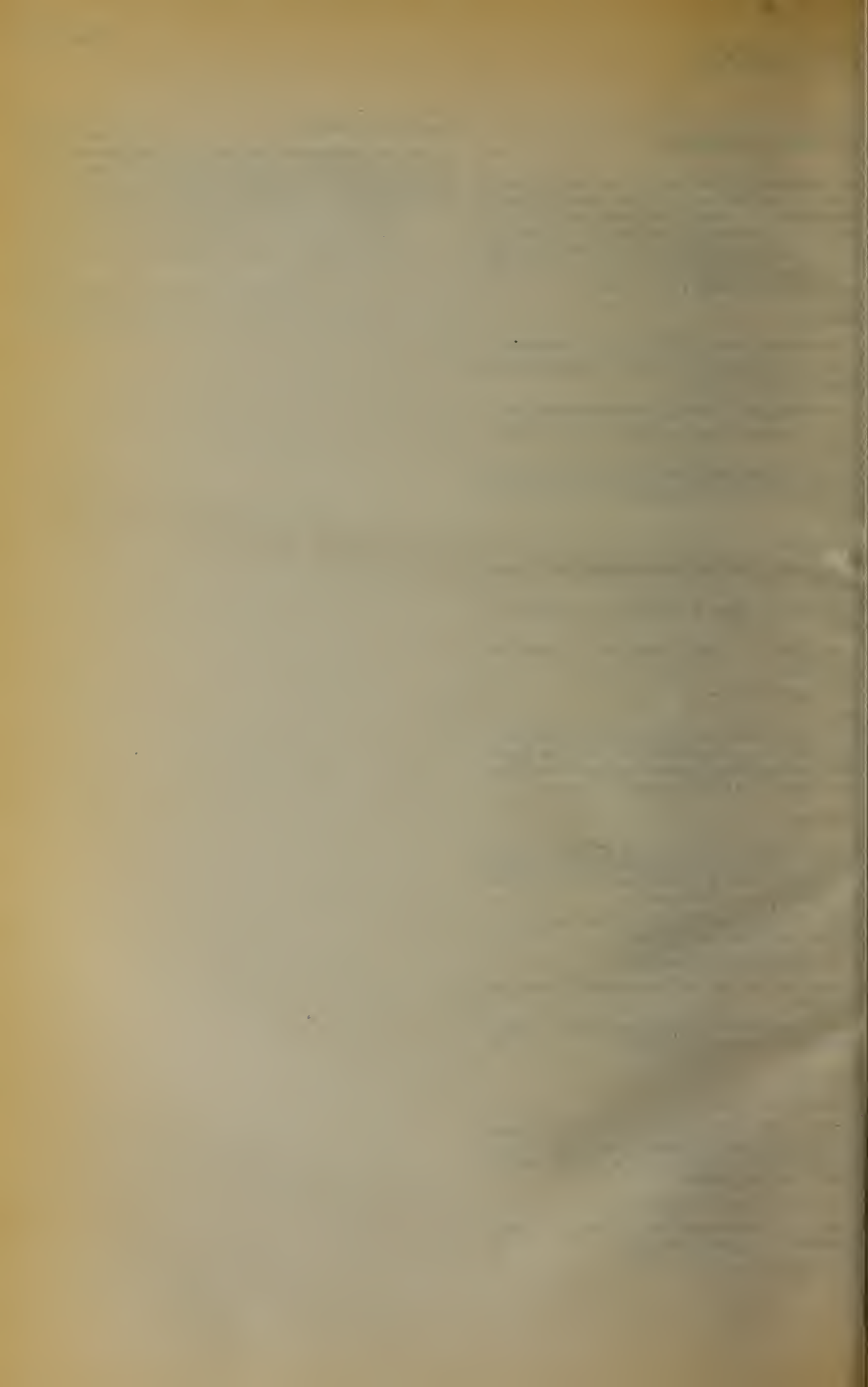
1. one Honours seminar course selected from the following: Psychology 49.320 (Behavioural Neuroscience), 49.350 (Developmental Psychology), 49.370 (Cognition) and 49.380 (Human Assessment);
2. one of Psychology 49.220★, 49.250★ or 49.270★ if not taken previously, and 49.230★;
3. one optional credit in Psychology;
4. one credit in Arts or Social Sciences other than Psychology;
5. one credit above the First-year level in Biology, Mathematics, Chemistry or Physics.

### Fourth Year

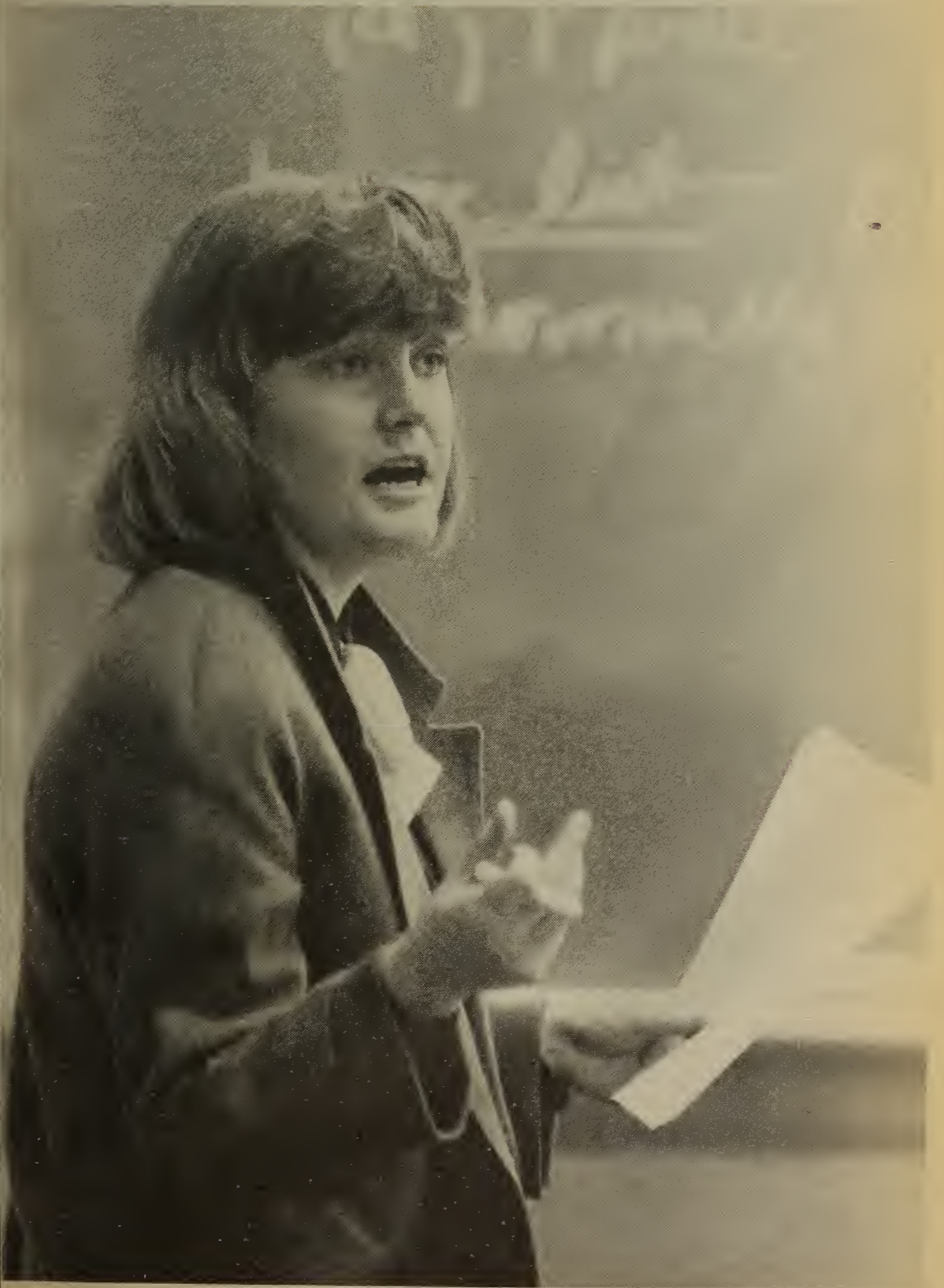
1. Psychology 49.498;
2. one credit in Psychology chosen from the following Science Continuation courses: Psychology 49.321★, 49.322★, 49.324★, 49.325★, 49.351★, 49.352★, 49.355★, 49.372★, 49.375★, 49.401★;
3. one optional credit in Psychology;
4. one credit above the First-year level in Biology, Mathematics, Chemistry or Physics;
5. one optional credit.

## Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see pp. 42-43) and all Faculty regulations (see p. 332-333), in addition to all departmental regulations and requirements as set out above.











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## Introduction

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The subject areas and specific courses listed in this section of the Calendar include:

- (a) courses supervised and/or administered by one of the four undergraduate faculties, but which are available as important areas of concentration to students registered in programs offered by other faculties;
- (b) courses offered by members of more than one discipline or faculty available to all students (subject to restrictions outlined within the course descriptions themselves and the regulations of the faculty in which the student is registered);
- (c) listings of courses offered by some or all of the faculties, grouped together by the general subject area they address;
- (d) a description of the services offered by the Centre for Applied Language Studies;
- (e) a list of courses given by specified departments that are offered chiefly for students who are not registered in Major, Honours or Combined programs in the department offering the course — "Courses for Non-Majors" p. 407.

# African Studies

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## Interdisciplinary Committee on African Studies

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The Committee on African Studies, made up of faculty members with research and teaching interests in Africa, acts as a co-ordinating unit for activities in this area. (Chairman 1986-87: Douglas G. Anglin, Department of Political Science.)

### Courses on Africa

Although there is no degree program in African Studies at Carleton, there is a strong teaching and active research interest. Courses relating to Africa have been given in various departments and schools for many years and students can select these courses as part of their degree programs.

Students may also submit a pattern of courses of African Studies for a B.A. Major or Honours (Directed Interdisciplinary Studies), according to the procedures described for this degree in the Calendar, p. 122.

Detailed descriptions of the courses below can be found in the various departmental listings. Courses at the 500 level are described in the Calendar of the Faculty of Graduate Studies and Research.

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### Courses Offered

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#### *Economics*

- 43.457★ The Economics of Development
- 43.458★ International Aspects of Economic Development
- 43.555★ The Economics of Development

#### *Geography*

- 45.329★ Geography of Development
- 45.330★ Developing Nations of Inter-Tropical Africa
- 45.520★ Problems of Development in Africa (46.563)
- 45.540★ Territory and Territoriality

#### *History*

- 24.275 History of Africa (not offered 1986-87)

#### *International Affairs*

- 46.529★ Conflict in Southern Africa
- 46.563★ Problems of Development in Africa (45.520★)

#### *Political Science*

- 47.310 Government and Politics in Africa
- 47.414★ Theory and Practice in Third-World Development
- 47.415★ Selected Problems in Third-World Development
- 47.482★ International Politics of Africa
- 47.517★ Selected Problems in African Politics
- 47.545★ Public Administration in Developing Countries
- 47.581★ Foreign Policies of African States



## General Information

Individual departments at Carleton have offered courses about Asia for many years. The University is a member of the Shastri Indo-Canadian Institute and the home of the executive secretariate of the Canadian Asian Studies Association. The Norman Paterson School of International Affairs and the Paterson Centre also support graduate studies and research on Asia.

The growing interest in Canada in the peoples and societies of Asia has promoted a gradual increase in the courses on Asia and related activities on campus. No degree program for Asian studies exists but members of the Committee for Asian Studies — created by faculty members in 1970 to co-ordinate courses and research work — offer a wide variety of courses about Asia. Committee members are available to advise students in Major or Honours programs in their departments.

Students may also submit a coherent pattern of courses selected from the list below for a B.A. Major or Honours (Directed Interdisciplinary Studies), according to the procedures described for this degree in the Calendar, p. 122.

## Members of the Committee

Robert Bedeski (*Political Science*)  
V.K. Chari (*English*)  
P.J. Davidson (*Law*)  
Nalini Devdas (*Religion*)  
H. Edward English (*Economics*)  
E. Peter Fitzgerald (*History*)  
S.G. Haider (*Architecture*)  
J. Keil (*Sociology-Anthropology*)  
David B. Knight (*Geography*)  
Leonard Librande (*Religion*)  
K. Marwah (*Economics*)  
O. Mehmet (*International Affairs*)  
S.B. Park (*Economics*)  
Eugene Rothman (*Religion*)  
Martin Rudner (*International Affairs*) *Chairman*  
Peter Slater (*Religion*)  
John Strong (*History*)  
V. Subramaniam (*Political Science*)  
John Sigler (*International Affairs*)  
Elliot Tepper (*Political Science*)  
David Van Praagh (*Journalism*)  
A.I. Wallace (*Geography*)

## Courses

All prerequisite conditions prescribed for these courses must be met. Detailed course descriptions for undergraduate courses are given under the appropriate department listing in this calendar. Descriptions for graduate courses (numbered 500 and above) can be found in the Graduate Studies and Research Calendar.

### Economics

- 43.457★ The Economics of Development
- 43.458★ International Aspects of Economic Development
- 43.555★ The Economics of Development

### Geography

- 45.540★ Territory and Territoriality

### History

- 24.278 The Middle East: 1798 to the Present
- 24.285 History of China
- 24.361★ The Russian Empire
- 24.386★ Modern Japan

### Journalism

- 28.421 Specialized Reporting (*Van Praagh*)
- 28.540 International Reporting

### Political Science

- 47.312 Government and Politics of East Asia
- 47.315 Government and Politics of South and South-East Asia
- 47.332★ East Asian Political Thought—China, Japan and Korea
- 47.483★ Foreign Policies of Major East Asian Powers
- 47.518★ State, Revolution and Reform in East Asia

### Religion

- 34.105★ Introduction to the Hindu Tradition
- 34.106★ Introduction to the Buddhist Tradition
- 34.109★ Introduction to Islam
- 34.205 The Buddhist Middle Way: Its Indian Developments
- 34.278 The Middle East: 1798 to the Present
- 34.320★ Selected Problems in Indian Thought
- 34.342★ Selected Topics in Islam
- 34.117 Introduction to Sanskrit
- 34.217 Readings in Sanskrit Literature

### International Affairs

- 46.508★ Development Planning: Theory and Practice
- 46.527★ Conflict in the Middle East
- 46.536★ The Third World in the Global Political Economic System
- 46.557 International Economic Law: Regulation of Trade and Investment
- 46.560 Human Resource Development
- 46.561★ Historical Dimensions of Development and Underdevelopment
- 46.567★ Development in Southeast Asia
- 46.569 Social Cost-Benefit Analysis and Development Project Evaluation
- 46.580★ Pacific Economic and Political Relationships

# Fine Arts

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## Faculty of Arts *Ad Hoc* Committee on Fine Arts

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The Faculty of Arts' *Ad Hoc* Committee on Fine Arts, made up of faculty members with research and teaching interests in fine arts, acts as a co-ordinating unit for activities in this area.

### Chairman

Mark Langer (*Film Studies*)

429 St. Patrick's Building, 564-6755

### Courses on Fine Arts

The University offers a wide range of courses in the Faculty of Arts and the School of Architecture relating to fine arts, and students may select these courses, when approved by their supervising departments, as part of their degree program.

Students may also submit a coherent pattern of courses on an area of fine arts for a B.A. Major or Honours (Directed Interdisciplinary Studies), in accordance with the procedures described for this degree in the calendar, p. 122. Assistance in planning such a pattern is available from members of the Committee on Fine Arts.

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### Courses Offered

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The Departments of Art History, Film Studies and Music, the various literature departments, and the School of Architecture all offer courses in fine arts. Detailed course descriptions are given under the appropriate faculty or department and are available from the Faculty of Arts' *Ad Hoc* Committee on Fine Arts. The Committee offers the following course:

Arts and Social Sciences 04.395

#### **Visual and Performing Arts in the Twentieth Century**

This interdisciplinary course is designed to examine selected aspects of the creation, distribution and reception of the arts in this century. The focus of the course is on the interplay of aesthetics, ideology and technology in music, theatre, film, art and architecture.

Prerequisite: Third-year standing and permission of the Committee.



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## Members of the Committee

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G.R. Carmody, *Chairman (Biology)*  
575 Tory Building, 564-2851

J.B. Kelly (*Psychology*)  
L.E. May (*Mathematics*)  
S.B. Peck (*Biology*)  
G.B. Skippen (*Geology*)  
B.R. Lifeso, *Registrar, Faculty of Science*

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## General Information

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Under supervision of the Integrated Science Studies Committee a student can create a unique, logically coherent and structured B.Sc. (Major or Honours) program integrating a strong base of Science studies with substantial work in a second discipline in another faculty (e.g. Engineering, Political Science, Economics, Journalism). Committee members assist the individual to construct a suitable program of courses.

There are nearly as many different patterns as there are students in the program. Some areas of study (combining both Science and non-science components) that are available through the program include environmental sciences, science and management studies, behavioural sciences, information sciences, and premedical studies. Additional information can be found in the program description in the Faculty of Science listings. See pp. 360-361.

# Interdisciplinary Courses

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## Humanities

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### Humanities 10.100

An examination of selected works, from Biblical times to the present, illustrating the various dominant views on the nature of humanity and attempts to understand people and their environment.

Prerequisite: First-year standing or higher.

Not offered 1986-87.

### Humanities 10.200★

An examination of selected works illustrating various dominant views on the nature of humanity and attempts to understand the world in the context of the twentieth century as seen from points of view of history, philosophy, social science and literature.

Prerequisite: Second-year standing or higher.

Not offered 1986-87.

Offered Summer 1986.

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## Arts and Social Sciences

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### Arts and Social Sciences 04.288

#### **Introduction to Women's Studies**

A survey course, designed to increase the student's understanding of the position of women in contemporary society. The course offers an introduction to such issues as biological and cultural sex differentiation, women and literature, women and religious institutions, women and politics, women and social and health services and women and the law. A brief introduction to the intellectual and social origins of feminism and a survey of women's place in Western European history provides a context for examining women's position in contemporary society. Evening division: Lectures and discussion three hours a week.

### Arts and Social Sciences 04.390

#### **The Literature of Existentialism**

A study of the origins, development, and principal characteristics of existentialist literature. (Also listed as English 18.390.)

All assigned readings will be in English.

Prerequisite: Permission of the Department of English.

Day division: Lectures two hours a week.

*B.W. Jones*

### Arts and Social Sciences 04.395

#### **Visual and Performing Arts in the Twentieth Century**

This interdisciplinary course is designed to examine selected aspects of the creation, distribution and reception of the arts in this century. The focus of the course is on the interplay of aesthetics, ideology and technology in music, theatre, film, art and architecture.

Prerequisite: Third-year standing and permission of the Fine Arts Committee (see p. 396).

### Arts and Social Sciences 04.491★

#### **Selected Topics in Women's Studies I**

Selected problems in the field of women's studies, not ordinarily treated in other course programs.

Prerequisite: Permission of the Interfaculty Committee on Women's Studies.

Seminar three hours a week.

### Arts and Social Sciences 04.492★

#### **Selected Topics in Women's Studies II**

Selected problems in the field of women's studies, not

ordinarily treated in other course programs.

Prerequisite: Permission of the Interfaculty Committee on Women's Studies.

Seminar three hours a week.

### Arts and Social Sciences 04.498

#### **Honours Essay**

A required interdisciplinary research essay for Honours students in the Fourth year of Directed Interdisciplinary Studies. The project is carried out by the student in consultation with a faculty supervisor. The project must be approved in advance by the Committee on Directed Interdisciplinary Studies; students must consult with the Program Co-ordinator in selecting a project and a supervisor. At least one week before the last day for course changes, students must submit to the Program Co-ordinator a written outline of the proposed study, approved by the supervisor. Arts and Social Sciences regulations governing Honours Theses and Research Essays apply to this project, which is equivalent to one credit.

Registration in this course is limited to students in the Fourth year of the B.A. (D.I.S.) Honours program.

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## Science

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### Science 60.100

#### **Man in His Environment**

This course is designed to acquaint students in Arts, Social Sciences and Engineering, with the methodology of science in approaching a problem. The historical aspects of scientific discoveries are examined, particularly those that influence present society. A special emphasis is directed to the interactions of science and society and to man's influence and impact on the natural environment.

Not offered 1986-87.

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## Technology, Society, Environment Studies

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Our society increasingly faces problems requiring communication among specialists of different disciplines. This is at least in part a result of increasing specialization of people and jobs. The multidisciplinary problems raised by the interaction of an industrial society with its environment, its resource base, and its complex technical systems are addressed by five courses organized by the Technology, Society, Environment Committee. These courses develop the multidisciplinary perspective through problem units on topics including energy, the industrial revolution, pollution, transportation, political regulation of technology, forecasting of technological and social change, technological innovation and the arms race. Each course involves team projects that bring together students working in different disciplines. The five courses are Technology, Society, Environment 59.300, 59.401★, 59.402★, 59.403★ and 59.404★. They are described on pp. 403-404.



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**Other Courses**

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African Studies, see p. 394.  
Asian Studies, see p. 395.  
Fine Arts, see p. 396.  
Integrated Science Studies, see p. 397.  
Labour Studies, see p. 400.  
Medieval Studies, see p. 402.  
Urban Studies, see p. 405.  
Women's Studies, see p. 406.

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**Directed Interdisciplinary Studies, B.A.**

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For information about the B.A. Directed Interdisciplinary Studies program see p. 122.

# Labour Studies

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## Members of the Committee

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### *Chairman*

F. Griezic (*History*)

### *Members*

R. Abbott (*Public Administration*)

M. Boyd (*Sociology*)

M. Campbell (*Social Work*)

W. Clement (*Sociology*)

D. Fraser (*Law*)

J. Jenson (*Political Science*)

M. Kiggundu (*Business*)

M. Mac Neil (*Law*)

R. Mahon (*Public Administration*)

F. Martinello (*Economics*)

R. Neill (*Economics*)

D. Olsen (*Sociology*)

R. Rupert (*Journalism*)

D. Smith (*Economics*)

E. Swimmer (*Public Administration*)

D. Swartz (*Public Administration*)

T. Wilkinson (*Continuing Education*)

Student Representatives

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## General Information

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The Committee on Labour Studies, consisting of faculty members with research and teaching interests in labour, acts as a co-ordinating unit for activities in this area. An interdisciplinary Labour Studies Research and Resource Centre has been established for use by the University community and the public at large. The University offers a wide range of courses in the humanities and social sciences relating to labour, and students can select these courses as part of their degree program.

Students may also submit a coherent pattern of courses in Labour Studies for a B.A. Major or Honours (Directed Interdisciplinary Studies) in accordance with the procedures described for the degree in the Calendar (p. 122). Assistance in planning such a pattern is available from members of the committee.

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## Courses Offered

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In developing a pattern in Labour Studies, the student can choose from the following suggested basic and related courses.

### **Basic Courses**

#### *Business*

42.312★ Personnel Management

42.317 Introduction to Industrial Relations

#### *Economics*

43.331 Social Economics

43.356★ Introduction to Labour Economics

43.357★ Introduction to Industrial Relations

43.435 Manpower Economics and Labour Policy

43.465 Industrial Relations

#### *History*

24.335★ Canadian Labour Movements since Confederation

24.340★ History of Canadian Socialism, 1890-1976

#### *Law*

51.341★ Employment Law

51.345★ Labour Law

51.445★ Labour Relations in the Public Service

#### *Philosophy*

32.209★ The Philosophy of Economic Activity

32.220 Introduction to Marxist Philosophy

32.284 Society, Value and Technology

#### *Political Science*

47.404★ Interest Groups in Canadian Politics

47.412★ Society and Politics in Liberal Democracies

47.413★ The State in Advanced Capitalist Societies

47.431★ Marxist Thought

47.432★ Contemporary Marxism

#### *Sociology/Anthropology*

53.245 The Sociology of Work: Occupations and Professions

53.346★ Industrial Sociology

### **Related Courses**

*Business:* 42.214, 42.311, 42.413

*Economics:* 43.325, 43.344★

*History:* 24.330★, 24.439, 24.458

*Law:* 51.210, 51.301, 51.321★, 51.353

*Philosophy:* 32.202, 32.330, 32.409

*Political Science:* 47.200, 47.313★, 47.335★, 47.345★, 47.400A, 47.401A

*Sociology:* 53.247, 54.333★, 53.345★, 53.347★, 53.452★, 53.458★

Other courses in specific disciplines may be applicable, and students should consult advisers in these disciplines.



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## Officers of the Centre

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*Director*  
To be announced

*Co-ordinator, English as a Second Language*  
Devon Woods

*Co-ordinator, Language Resource Unit*  
To be announced

*Co-ordinator, Writing Tutorial Service*  
Aviva Freedman

*Professor*  
Janice Yalden

*Associate Professor*  
Aviva Freedman

*Assistant Professor*  
Devon Woods

*Instructors*  
Patricia Currie  
Trudy O'Brien  
Lynne Young

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## General Information

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The Centre for Applied Language Studies exists to foster the development of activities in language teaching and learning, including research and publication. The Centre functions by providing links between those units that have a service function in common, and co-ordinates activities in language studies for specific and functional purposes.

The Centre comprises three units: English as a Second Language, the Language Resource Unit and the Writing Tutorial Service.

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## English as a Second Language

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The English as a Second Language (ESL) Unit offers a number of types of courses for students for whom English is not the native language, including credit courses (see course descriptions, p. 140), and non-credit courses. The non-credit courses are offered on a full-time basis (as the Intensive Courses) or on a part-time basis (individual courses related to specific language needs). In addition, the ESL Unit develops and carries out specialized courses for client groups based on their academic or professional needs.

The ESL Unit also engages in research activities related to analysis of students' language needs, development of methodologies and materials for teaching, and development of methodologies and materials for self-directed learning, and assessment of language activities through testing.

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## Language Resource Unit

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The Language Resource Unit houses print and non-print materials for language learning; the language laboratories are part of the unit. It offers specialized courses in many foreign languages; these courses vary in length and intensity and are designed to meet the special language requirements of particular groups.

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## Writing Tutorial Service

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The Writing Tutorial Service offers a flexible and multi-faceted approach to the teaching of writing at the University. The program consists of individualized tutorials, supplementary workshops on style, mini-courses on the principles of academic writing in general, and seminars on the finer points of discipline-specific writing (such as the writing of law essays and examinations). In addition, the service is regularly called on to deal with special writing problems arising in specific courses or disciplines by designing individual ancillary programs in response to, and in consultation with, the instructors in those disciplines.

# Medieval Studies

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## Interfaculty Committee on Medieval Studies

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The Committee on Medieval Studies, made up of faculty members with research and teaching interests in the Middle Ages, acts as a co-ordinating unit for activities in this area. The Committee is a member of the Standing Committee on Centers and Regional Associations (CARA) of the Medieval Academy of America. (Chairman 1986-87: D. le Berrurier, Art History.)

### Courses on the Middle Ages

The University offers a wide range of courses in the humanities and social sciences relating to the Middle Ages, and students can select these courses as part of their degree program.

Students may also submit a coherent pattern of courses in Medieval Studies for a B.A. Major or Honours (Directed Interdisciplinary Studies), in accordance with the procedures described for this degree in the Calendar, p. 122. Assistance in planning such a pattern is available from members of the Committee on Medieval Studies.

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### Courses Offered

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#### *Art History*

- 11.220★ Western Medieval Art
- 11.221★ Eastern Medieval Art
- 11.325★ Russian Art
- 11.327★ Gothic Architecture and Monumental Sculpture
- 11.328★ Gothic Minor Arts
- 11.422★ Topics in Eastern Medieval Art
- 11.423★ Topics in Western Medieval Art

#### *Classics*

- 13.321★ Studies in Greek History and Institutions, Special topic for 1986-87: The Early Byzantine Era (Also listed as History 24.309★)
- 13.429 Selected Topics in Greek and Roman History, Special Topic for 1986-87: The Late Roman Empire (Also listed as History 24.429)

This Department offers several courses in Greek and Latin.

#### *English*

- 18.312 Old English
- 18.322 Chaucer and the Literature of Medieval England
- 18.428★ Studies in Medieval Literature I, Special topic for 1986-87: The Gawain Poet
- 18.429★ Studies in Medieval Literature II, Special topic for 1986-87: Malory's Morte Darthur

#### *French*

- 20.261★ La littérature du Moyen Age
- 20.333★ Histoire de la langue

#### *German*

- 22.430 Medieval Language and Literature

#### *History*

- 24.205 England during the Middle Ages
- 24.405 Selected Problems in Medieval History

#### *Italian*

- 26.491 Special Studies

#### *Law*

- 51.491★ Tutorial in Law

#### *Music*

- 30.210★ Music in the Middle Ages

#### *Philosophy*

- 32.225 Reason and Revelation
- 32.416★ Medieval Philosophy

#### *Political Science*

- 47.334★ Ancient and Medieval Political Thought

#### *Psychology*

- 49.401★ Special Topics in Psychology: Psychology from the Middle Ages

#### *Spanish*

- 38.415★ Medieval Spanish Literature from the Origins through 1300
- 38.416★ Medieval Spanish Literature, 1300-1500



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## Members of the Committee

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### Chair

P. Kruus (*Chemistry*)

### Members

P.A. Bruck (*Journalism*)

G. Carmody (*Biology*)

D. Coll (*Engineering*)

W. Gilles (*Industrial Design*)

R. Gingrich (*Student Representative*)

B. Jones (*English*)

J. Sigler (*Political Science*)

K. Torrance (*Geography*)

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## General Information

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It is becoming increasingly apparent that:

1. The future of the Western societies depends on their ability to cope with the complex problems resulting from the interactions of Technology, Society and the Environment (TSE).

2. The effectiveness of the democratic political process is contingent upon the perception and comprehension of these phenomena by the electorate.

3. Because of the complexity and the wide range of the problems involved, their understanding cannot be gained through specialized education in traditional disciplines. A multidisciplinary approach is required.

The multidisciplinary courses listed below, offered under the direction of the TSE Studies Committee, seek to fulfil this need. They are designed to provide students from all faculties with a solid basis for understanding the major problems of industrialized society, and with firsthand appreciation through research project work, of the complexities involved. The TSE courses are open to all students beyond the First year; these courses are especially recommended for students at the Third- and Fourth-year levels. Students enrolled in three-year programs, however, who would like to take these courses are encouraged to take TSE 59.300 in the Second year.

Students may also submit a coherent pattern of courses in TSE Studies for a B.A. (Directed Interdisciplinary Studies), in accordance with the procedures described for this degree in the Calendar, p. 122. Assistance in planning such a pattern is available from members of the TSE Committee.

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## Courses Offered

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Technology, Society, Environment 59.300

### Interactions in Industrial Society

A course intended to introduce students from all faculties to the study of the major problems of industrialized society. Topics covered include: historical perspectives of technology and industrialization, technology as a motive force in history and as an element of culture, population growth, impact of technology on the natural environment (e.g. climate, ecological balances), utilization of renewable and non-renewable resources, current and potential future energy resources, modernization (especially with regard to developing countries), technology as an agent of global integration. Much of the analysis is based on case studies. Group workshops are a major

part of the course and are given considerable weight in the final grading. A number of lecturers from within and outside the University will participate.

Prerequisite: Registration in Second or higher year or equivalent.

Lectures and workshops three hours a week.

Technology, Society, Environment 59.401★

### Technology and Society: Assessment

The course examines the complexities and practice of evaluating the relationship and impact of technology on society and the physical environment. Specific topics include: risk analysis; cost-benefit analysis; regulation of technology; retrospective assessment of projects; necessary aspects of an assessment project; examples of technology assessments. A project in the last portion of the course comprises a significant portion of the course work. A number of lecturers from government and the University will participate.

Prerequisite: Registration in Third or higher year or equivalent.

Not offered 1986-87.

Technology, Society, Environment 59.402★

### Technology and Society: Forecasting

The objective of the course is to introduce the participants to the forecasting methods that are used in government and industry. Topics are also covered that should indicate how an activity such as forecasting fits into the context of industrial society. Roughly half the time in the course is used to present various methods used in forecasting: trend analysis, Delphi techniques, normative forecasting, scenario development, and modelling. These methods are illustrated by in-class projects and a major group forecasting project. This coverage of methods is interspersed with discussion of related topics, such as: successes (and failures) of forecasts in history, science fiction writers as forecasters, ideological views of forecasting and the future, analysis of the processes of invention and innovation, and technology policy. A significant number of guest lecturers are involved in the course.

Prerequisite: Registration in Third or higher year or equivalent.

To be given in alternate years (alternating with TSE 59.403★).

Not offered 1986-87.

Technology, Society, Environment 59.403★

### Technology and Society: Innovation

The course examines the process of technological and social innovation, with special emphasis on the Canadian context. Specific topics include: historical examples of innovation; the relation of technological and social innovation to economic development; analysis of the steps in innovation; impact of innovation on employment; impediments to and incentives for innovation in Canada. A number of lecturers from industry, government and the University will participate in the course. A significant portion of the final grade will be based on the results of group research projects.

Prerequisite: Registration in Third or higher year or equivalent.

To be given in alternate years (alternating with TSE 59.402★).

Fall term: Lectures and workshops three hours a week.

Technology, Society, Environment 59.404★

### Technology and Society: The Arms Race

The course examines various aspects of the arms race, with particular emphasis on the impediments to control

of armaments. Specific topics include: the history of armaments and arms control treaties; current military arsenals; performance of weapons, including the bacteriological and chemical; development, manufacture and trade of armaments; military use of space; sociology of conflict; views of religion on warfare; negotiating tactics in disarmament; technological innovation vs weapon control; availability of information regarding armament; effect of the arms race on less-developed nations. The course is given in modules with lecturers from the University and outside organizations. A project in the form of a simulation of a disarmament conference is a major part of the course.

Prerequisite: Registration in Third or higher year or equivalent.

Evening division, Winter term: Lectures and workshops three hours a week.

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### Other Related Courses

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Other courses related to the TSE area offered by various departments and schools within the University are listed for the convenience of students. Detailed course descriptions are given under the appropriate faculty or department. Please note that all prerequisite conditions prescribed for these courses must be met.

#### Architecture

- 76.208★ Design of Cities
- 76.209★ Theory of City Form
- 76.302★ History of Canadian Architecture
- 76.423★ Society and Shelter

#### Biology

- 61.190 Biology and Man
- 61.262★ Ecology in Architecture
- 61.391★ Biology in Society
- 61.393★ Biology and Development of Renewable Resources
- 61.430★ Topics in Applied Environmental Microbiology

#### Classics

- 13.235 Ancient Science and Technology

#### Computer Science

- 95.102★ Introduction to Computers

#### Economics

- 43.363★ Introduction to Economic Development
- 43.365★ The Economics of Planning
- 43.385★ The Economics of Natural Resources

#### Engineering

- 82.333★ Urban Planning (also Geography 45.433★)
- 82.434★ Transportation (also Geography 45.434★)

#### English Language and Literature

- 18.207 Literature and the Sciences

#### Film Studies

- 19.333 Film and Society

#### Geography

- 45.102★ Geographic Analysis of Contemporary Issues: Environment, Economy and Resource Use
- 45.211★ Geomorphology and Environmental Management
- 45.230★ The Cultural Landscape

- 45.231★ Conflict and Accord in the Modern World
- 45.329★ Geography of Development
- 45.330★ Developing Nations of Inter-Tropical Africa
- 45.333★ Land Use, Regional Development and Planning in Canada
- 45.334★ Renewable Resource Planning in a Local Area
- 45.351★ Northern Lands
- 45.404★ Environmental Impact Assessment
- 45.405★ Problems of Environmental Impact Assessment
- 45.445★ Land Resource Use

#### History

- 24.329★ Canadian Urban History
- 24.330★ Social History of Canada
- 24.354 Women and Society: 1700 to the Present

#### Interdisciplinary (Science)

- 60.100 Man in His Environment

#### Interdisciplinary (Humanities)

- 10.100 Humanities
- 10.200★ Humanities

#### Journalism

- 28.300 The Modern Environment

#### Law

- 51.205 Introduction to Public Law
- 51.325★ Consumer Law
- 51.355★ Law Reform and the Protection of Life
- 51.380 Law of Environmental Quality

#### Mass Communication

- 27.111 Introduction to Mass Communication
- 27.211 The Mass Media in Modern Society

#### Philosophy

- 32.200 Science and the Human
- 32.284★ Society, Value and Technology
- 32.332★ Issues in the Philosophy of Science
- 32.333★ Science and the Structure of Society

#### Physics

- 75.291★ Physics of the Environment I
- 75.292★ Physics of the Environment II

#### Political Science

- 47.403★ Politics and the Media

#### Psychology

- 49.210★ Introduction to Social Psychology

#### Sociology and Anthropology

- 56.253★ Introduction to Human Ecology
- 53.254★ Urban Sociology
- 53.260★ Community
- 54.333★ Economic Anthropology
- 53.339★ Society and Shelter
- 53.346★ Industrial Sociology
- 56.360 Development and Social Change
- 53.380 Social Policy



## General Information

Many urban studies courses are offered at Carleton. A student must fulfil the stated requirements of a disciplinary Major, Honours or Combined pattern but at the same time it is possible for the student to design a sound interdisciplinary program of study that will provide a broader understanding of urban phenomena and processes than would be gained from the point of view of a single discipline.

The Interfaculty Committee on Urban Studies has drawn up the following list of undergraduate courses in urban studies currently offered at Carleton. Students should consult the disciplinary listings in the calendar for detailed course descriptions and prescribed prerequisites; note that these *may* be waived, at the discretion of the school or department concerned.

Urban studies are finely interwoven with the wider universe of knowledge. Accordingly, certain courses listed relate to important background issues as well as to explicit urban content and many other courses not listed (including on-campus and field courses) may provide valuable support.

Students may submit a coherent pattern of courses in urban studies for a B.A. Major or Honours. (Directed Interdisciplinary Studies); in accordance with the procedures described for this degree in the Calendar, p. 122. Assistance in planning such a pattern is available from members of the Committee on Urban Studies.

Co-ordinator 1986-87: D. Bennett, Department of Geography.

- 45.333★ Land Use, Regional Development and Planning in Canada
- 45.421★ Selected Themes in Urban Geography
- 45.433★ Urban Planning
- 45.442★ Transportation Geography

## Geology

- 67.417★ Engineering Soil Mechanics and Engineering Geology

## History

- 24.329★ Canadian Urban History
- 24.330★ Social History of Canada

## Law

- 51.374 Local Government Law

## Physics

- 75.291★ Physics of the Environment I
- 75.292★ Physics of the Environment II

## Political Science

- 47.302★ Canadian Municipal Government
- 47.303★ Canadian Urban Politics

## Sociology and Anthropology

- 56.253★ Introduction to Human Ecology
- 53.254★ Urban Sociology
- 53.260★ Community
- 53.339★ Society and Shelter

## Courses Offered

### Architecture

- 76.205★ Theories of Landscape Design 1
- 76.208★ Design of Cities
- 76.209★ Theory of City Form
- 76.308★ Origins of Modern Architecture
- 76.328★ Workshop: The Architecture of Urban Space
- 78.323★ Workshop: Landscape Architecture
- 78.340★ City Organization and Planning Processes
- 78.345★ Workshop: Urban Design
- 78.349★ Workshop: City Organization and Planning Processes

### Art History

- 11.302★ Canadian Architecture
- 11.305★ American Architecture
- 11.350★ British Art and Architecture: 1600-1850

### Economics

- 43.480 Research Seminar in Urban Economics

### Engineering

- 82.333★ Urban Planning
- 82.434★ Transportation
- 82.435★ Transportation Geography

### Geography

- 45.220★ Geography of the Global Economy
- 45.221★ Geographical Challenges of Contemporary Economies
- 45.320★ The Canadian City: Internal Structure and Contemporary Problems
- 45.321★ Systems of Cities: Global Perspectives

# Women's Studies

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## Members of the Committee

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### *Executive*

Chair: To be announced

Keith Bell (*Geology*)

Elinor Burwell (*Psychology*)

Susan Boyd (*Law*)

Joe Ramisch (*Religion*)

Jill Vickers (*Institute of Canadian Studies*)

### *Corresponding Members*

Dean D. Forcese (*Faculty of Social Sciences*)

Dean N.E.S. Griffiths (*Faculty of Arts*)

Dean S.F. Wise (*Faculty of Graduate Studies and Research*)

Florence Andrews (*Sociology-Anthropology*)

Marilyn Barber (*History*)

Monica Boyd (*Sociology-Anthropology*)

Susan Boyd (*Law*)

Fran Cherry (*Psychology*)

Mary Jane Edwards (*English*)

Deborah Gorham (*History*)

Jared Keil (*Sociology-Anthropology*)

Elaine Keillor (*Music*)

Fran Klodawski (*Co-ordinator, Status of Women*)

Barbara Lecker (*English*)

Helen Levine (*Social Work*)

Suzanne MacKenzie (*Geography*)

Rianne Mahon (*Public Administration*)

Marilyn Marshall (*Art History*)

Susan Painter (*Psychology*)

Eileen Saunders (*Mass Communication*)

Patricia Smart (*French*)

Caryll Steffens (*Sociology-Anthropology*)

Alvina Ruprecht (*French*)

Gillian Walker (*Social Work*)

Gurlie Woods (*Comparative Literature*)

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## General Information

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Women's Studies courses have been offered at Carleton since 1971-1972. Such courses have developed at Carleton, as they have elsewhere, in response to the fact that the experience of woman has not received adequate attention from the academic community.

At Carleton, Women's Studies courses are offered by several departments, and faculty members and graduate students are pursuing research in the area in many departments. The Interfaculty Committee on Women's Studies provides co-ordination for these activities. In addition to its co-ordinating functions, the committee encourages, throughout the University, an awareness of an obligation on the part of all academic disciplines to include a fuller treatment of women's contribution and experience than has been offered in the past.

Although there is no women's studies degree program at Carleton, students may submit a pattern of Women's Studies for a B.A. Major or Honours (Directed Interdisciplinary Studies), according to the procedures described for this degree on p. 122.

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## Courses Offered

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The following course offerings are listed here for the convenience of students. Detailed course descriptions are given under the appropriate faculty, or interdisciplinary listing.

### **Faculty of Arts**

#### *Comparative Literature*

17.506T2 The Women Around the Turn of the Century

#### *English*

18.292 Women and Literature

#### *History*

24.354 Women and Society: 1700 to the Present

24.559 Women in Nineteenth- and Twentieth-Century North America and Britain

#### *Mass Communication*

27.355★ Media and Gender

#### *Philosophy*

32.236★ Philosophy and Feminism

#### *Religion*

34.201 Women in Religious Traditions

### **Faculty of Graduate Studies and Research**

#### *School of Social Work*

52.506★ Women and Welfare

52.528★ Feminist Counselling

52.542★ Women and Social Policy

#### *Institute of Canadian Studies*

12.520T2 Women's Studies

### **Interdisciplinary Arts and Social Sciences**

04.288 Introduction to Women's Studies

04.491★ Selected Topics in Women's Studies I

04.492★ Selected Topics in Women's Studies II

### **Faculty of Social Sciences**

#### *Business*

42.464★ Men and Women in Management

#### *Law*

51.301★ Women and the Legal Process

#### *Political Science*

47.313★ Women in Politics: A Comparative Perspective

47.318★ Women in Developing Polities: A Comparative Assessment

#### *Psychology*

49.363★ Psychology of Women

49.580★ Psychology of Women

#### *Sociology-Anthropology*

53.247 Women in Society

54.248★ The Anthropology of Women

53.530★ Social Institutions I

54.538★ Feminist Analyses

53.568★ Women and Work



# Courses for Non-Majors

The courses that appear in the following list are offered exclusively or primarily for students specializing in another discipline. This section is intended to assist students to find courses of interest, which would otherwise be difficult to locate in the calendar. Descriptions for these courses are contained in the appropriate departmental section.

## *Art History*

- 11.115★ Art as Visual Communication

## *Biology*

- 61.190 Biology and Man  
61.191★ Sociobiology  
61.192★ Natural History  
61.262★ Ecology in Architecture  
61.393★ Biology and Development of Renewable Resources

## *Business*

- 42.214★ Introduction to Management  
42.224★ Basic Marketing

## *Chemistry*

- 65.107 The Chemistry of Art and Artifacts  
65.222 Organic Chemistry

## *Classics*

- 13.102★ Aspects of Greek Civilization  
13.103★ Aspects of Roman Civilization  
13.209 Greek and Roman Literary Genres  
13.231 Methods and Techniques of Archaeology  
13.235 Ancient Science and Technology  
13.300 Classical Mythology

## *Comparative Literature*

- 17.301 The Dynamics of Literary Production and Response  
17.361 Studies in Literary Genres  
17.401 Foundations of Comparative Literature

## *Computer Science*

- 95.100★ Introduction to Computers for the Humanities  
95.101★ Introduction to Computers for Social Sciences  
95.103★ Introduction to Scientific Computing  
95.140★ Introduction to Computers for Business Students

## *Economics*

- 43.201★ Introduction to Microeconomic Theory and Analysis  
43.211★ Introduction to Macroeconomic Theory and Analysis

## *English Language and Literature*

- 18.100 English Authors from Chaucer to T.S. Eliot  
18.101 English and Continental Texts  
18.105 Writing and Language  
18.206 Children's Literature  
18.208 Myth and Symbol  
18.268 Forms and Conventions of the Cinema  
18.291 Poetry Workshop  
18.292 Women and Literature  
18.296 The Writer, Literature and Society

## *French*

- 20.100 Elementary French  
20.101 Introductory Immersion French  
20.102 Intermediate French (A)  
20.103 Intermediate French (B)  
20.106★ Reading French

- 20.108 Advanced French for Non-Majors  
20.110 Advanced French for Journalism Students  
20.151 French-Canadian Literature  
20.152 French Literature

## *Geology*

- 67.383★ Gemmology

## *German*

- 22.115 Introductory German

## *History*

- 24.102 The World in the Twentieth Century  
24.231 Historical Introduction to Modern Canada

## *Italian*

- 26.100 Introductory Italian  
26.105★ Spoken Italian I  
26.106★ Spoken Italian II  
26.110★ Written Italian  
26.200 Intermediate Italian  
26.206★ Italian Conversation  
26.260 Introduction to Italian Literature

## *Law*

- 51.231★ Business Law I  
51.232★ Business Law II

## *Mathematics and Statistics*

- 69.104★ Calculus for Engineering Students  
69.107★ Elementary Calculus I  
69.109★ Calculus: with Applications to Business and Economics  
69.114★ Algebra for Engineering Students  
69.117★ Elementary Algebra  
69.119★ Algebra: with Applications to Business and Economics  
69.141★ Gambling I  
69.142★ Gambling II  
69.201 Intermediate Calculus  
69.202 Intermediate Mathematics  
69.250 Introduction to Statistical Analysis  
69.265★ Probability Models  
69.266★ Business Statistics I  
69.267★ Business Statistics II  
69.352★ Engineering Statistics  
69.375★ Mathematical Methods I  
69.376★ Mathematical Methods II

## *Music*

- 30.100 Introduction to the Music of Western Civilization  
30.115 Elementary Materials of Music

## *Physics*

- 75.190 Introduction to Astronomy  
75.195 Physics of Music  
75.291★ Physics of the Environment I  
75.292★ Physics of the Environment II  
75.301★ Advanced Physics Laboratory for Non-Physics Science Students  
75.302★ Advanced Physics Laboratory for Non-Physics Science Students  
75.364★ Modern Physics

## *Religion*

- 34.102★ Introduction to the Literature of the Hebrew Bible (Old Testament)  
34.103★ Introduction to New Testament Literature  
34.105★ Introduction to the Hindu Tradition  
34.106★ Introduction to the Bhuddist Tradition

- 34.107★ Christianity
- 34.108★ Introduction to Judaism and the Jewish People
- 34.109★ Introduction to Islam
- 34.201 Women in Religious Traditions
- 34.202 Interpretations of Religion

*Russian/Ukrainian*

- 36.110 Scientific Russian
- 36.120★ Applied Russian for International Relations I
- 36.121★ Applied Russian for International Relations II
- 36.116 Introductory Ukrainian
- 36.216 Advanced Ukrainian
- 36.290 Twentieth-Century East-European Literature  
in English Translation
- 36.360★ Special Topic: Dostoevsky to Chekhov (in  
English Translation)
- 36.361★ Special Topic: The Revolution and After (in  
English Translation)
- 36.390 Slavic or Hungarian Language Tutorial

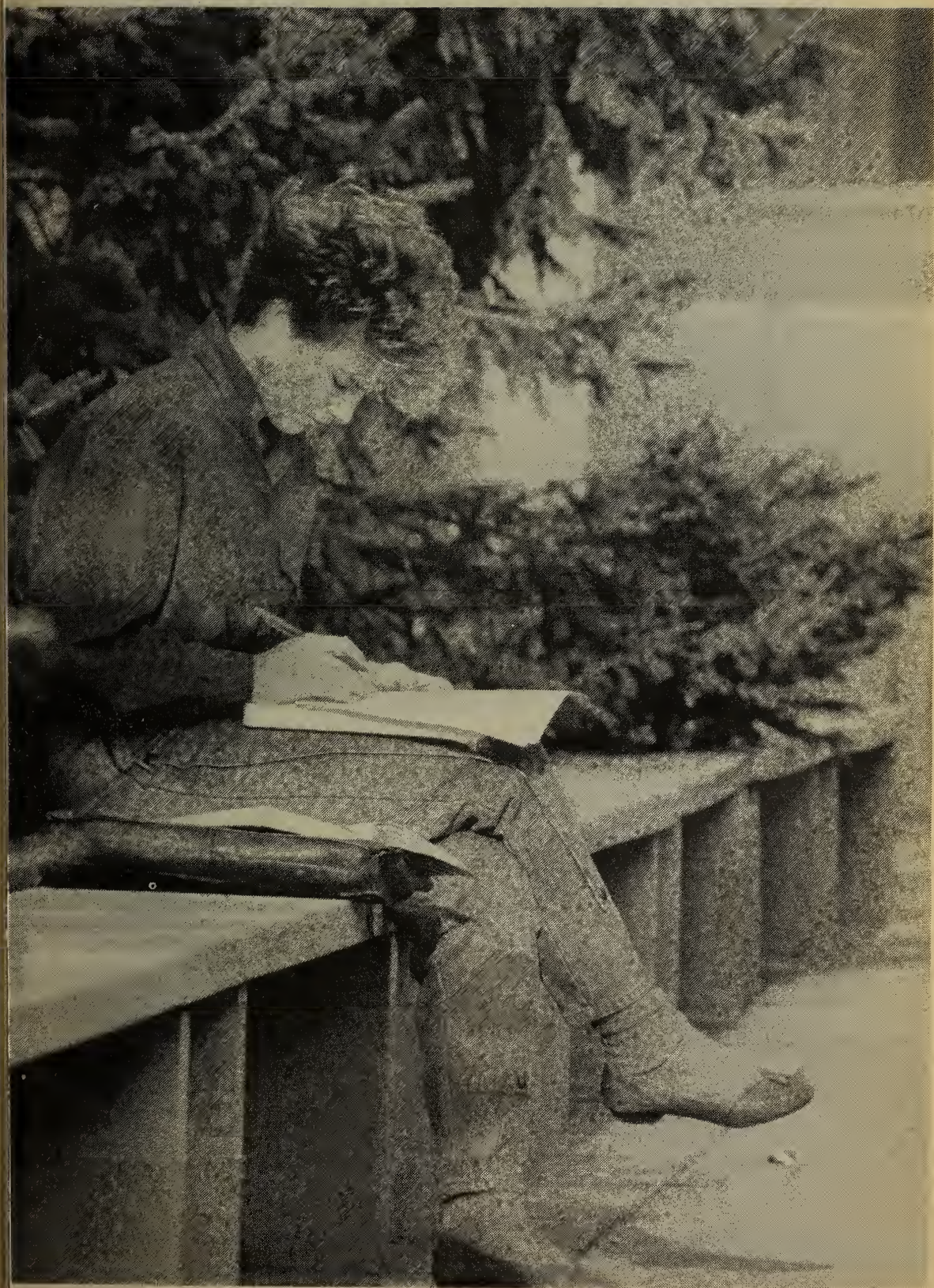
*Science (Interdisciplinary)*

- 60.100 Man and His Environment

*Technology, Society, Environment Studies*

- 59.300 Interactions in Industrial Society
- 59.401★ Technology and Society: Assessment
- 59.402★ Technology and Society: Forecasting
- 59.403★ Technology and Society: Innovation
- 59.404★ Technology and Society: The Arms Race











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## Awards for Academic Excellence

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### Medals

#### *The Governor-General's Medal*

Awarded annually to the student standing at the head of the graduating class. Donor: Her Excellency the Governor-General of Canada. Established 1952.

#### *The Chancellor's Medal*

Awarded annually in the name of the Chancellor of the University to a graduating student of outstanding academic achievement.

#### *The President's Medal*

Awarded annually in the name of the President of the University to the student with the highest standing in a pass program of studies.

#### *University Medals*

Awarded annually, when merited, to the graduating students standing highest in Arts, Social Sciences, Science, Engineering, Architecture, Commerce, Journalism, Computer Science, Industrial Design, Music and Public Administration. Established 1949.

#### *Senate Medals*

Awarded, when merited, to graduating students of outstanding academic achievement. Established 1952.

#### *Lieutenant-Governor's Medal in Architecture*

Awarded annually, when merited, to the student standing at the head of the graduating class in Architecture. Established 1979.

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## Undergraduate Entrance and In-Course Scholarships

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Carleton University awards scholarships tenable at the University, in the Fall/Winter session of the year of offer, to entrance and in-course full-time undergraduate students who have demonstrated a high potential for university studies. The intention of the scholarship policy is to recognize, attract and provide incentives for excellence. The total value of the scholarship or scholarships awarded is determined by the student's most recent academic standing.

The following entrance scholarships will be offered in 1986-87:

Three Chancellor's scholarships with a total possible value of \$10,000 over four years (\$4,000, \$3,000, \$2,000 and \$1,000). The scholarship may be continued each year of full-time enrolment, provided the student maintains A standing. These scholarships require an application, which must be completed and returned to the Awards Office by May 14. Priority will be given to academic performance, and the committee will also consider the applicant's other interests and activities during secondary school.

One hundred scholarships with a total possible value of \$3,000 over three years (\$1,000 per year). The scholarship may be continued for two years of full-time enrolment, provided the student maintains A standing.

One hundred scholarships valued at \$750 for the entrance year only.

One hundred awards valued at \$150 for the entrance year only.

Twelve awards valued at \$250 for the entrance year only, to be given to the top six students entering Carleton from the Ottawa and Carleton Boards of Education. This

award will be in addition to any other the student may receive from Carleton.

All in-course students and all graduating students who meet the academic requirements for the awarding of University in-course scholarships will be named to the Deans' Honour List for every year in which they qualify.

University in-course scholarships (based on full- or part-time study) will be awarded on the following conditions:

1. The student must be enrolled in a degree program at the time of selection;
2. The student must be working towards his or her first degree;
3. A minimum 10.0 grade-point average is required;
4. The grade points of all credits taken in the period considered for the scholarship will be used to calculate the grade-point average;
5. No F, FNS or Abs will be acceptable during the period considered for the scholarship;
6. No grades achieved through a grade-raising examination will be considered;
7. Each summer, the Selection Subcommittee will determine the value of the scholarships to be awarded for each grade-point average; and
8. The value of the scholarships will be based on a normal full course load over the period considered of five credits (Arts, Science and Social Sciences) and six credits (Engineering). Students who have taken less than the full course load will be offered a scholarship prorated in value (for example four-fifths or nine-tenths of the value).

### *Full-time Students:*

1. The definition of a full-time student is a student who takes a minimum of four credits during the Fall/Winter Session.
2. Scholarships will be based on all credits taken in the 12-month period May to April.
3. In order to hold the scholarship, the student must be returning to Carleton as a full-time undergraduate student.
4. A student may not hold University scholarships for more than four years (five in Architecture).

### *Part-time Students:*

1. The definition of a part-time student is a student who takes fewer than four credits during the Fall/Winter Session.
2. Candidates will be considered for scholarships based on the average of all credits (minimum of four) taken in the past 24 month period (May - April). However, if the candidate was awarded a scholarship the previous spring, a minimum of four new credits must be considered for the new scholarship; the same credit may not be used twice for scholarship consideration.
3. The student must be continuing at Carleton in his or her undergraduate degree program.
4. The value of the scholarship must be used to defray the cost of tuition for courses taken as part of the degree in subsequent years at Carleton.

### *Note:*

Since the income from funds may vary from year to year, the values shown for scholarships, awards and bursaries may change.

## Scholarships and Awards by Programs

*Scholarships and awards of varying amounts, which are of interest to students in specific programs, are listed below:*

### Architecture

Michael Russell Coote Memorial Award  
Ontario Association of Architects Awards  
Page and Steele School of Architecture Scholarship  
Jack Deutsch Memorial Masonry Award  
Planning and Construction Department of Carleton University's Award in the Building Sciences  
Jacques and Hélène Sabourin Memorial Scholarship  
James Whenham Award

### Arts

A. Andras Memorial Grant  
Award of the Embassy of Austria  
The Honourable Walter Baker Memorial Scholarship in Political Science  
F. Luella Barrigar Scholarships  
Jack Barwick and Douglas Duncan Memorial Scholarship in Art History  
Jack Barwick and Douglas Duncan Memorial Scholarship in Music  
Bruce Beecher Memorial Award  
Claude Brunelle Memorial Scholarship  
Landen Dominic Burnett Memorial Award  
Carleton Beaverbrook Awards for Freedom of the Press  
CHEZ-FM Research Award(s) in Mass Communication  
Bertha F. Davis Award in Religion  
Department of French Awards  
Awards of the Embassy of France  
Awards of the Embassy of the Federal Republic of Germany  
Louis and Miriam Goldstein Book Award in Judaic Studies  
Peter Gerard Harris Memorial Award  
Sara Helen Parry Hughes Travel Award  
Award of the High Commission of India  
Allama Mohammad Iqbal Award  
Award of the Embassy of Italy  
Marston LaFrance Memorial Award in English  
R.L. McDougall Award in English  
Music Department Award  
Jayashree A. Nagpur Memorial Award  
National Council of Jewish Women of Canada Award  
Bettina Oppenheimer Memorial Scholarship in Music  
Ottawa Muslim Women's Auxiliary Award  
Ottawa Women's Canadian Club Scholarship  
Award of the Government of Quebec for Excellence in the Study of French  
Annie Fraser Roy Scholarships  
Department of Russian Undergraduate Award  
Samuel Sair Canadian Jewish History Prize  
Award of the Embassy of Spain  
Award of the Ambassador of Switzerland to Canada  
Awards of the Embassy of the Union of Soviet Socialist Republics  
Wainwright Scholarships  
Wilgar Memorial Award in English  
Gordon J. Wood Scholarships in English  
Susan Joan Wood Memorial Scholarship  
Hume Wrong Scholarship

### Business

Canadian Tire Corporation Scholarship  
Victor S. Castledine Scholarship

Certified General Accountants Association of Ontario Award for Excellence  
Clarkson, Gordon & Company Award  
Manufacturers Life Scholarship in Business  
D.F. McKechnie Award in Accounting  
James Nolan Memorial Award  
Ontario Credit Union Charitable Foundation Award  
Charles Pinhey Award  
Lawrence Segal Memorial Fund  
Thorne, Riddell & Company Scholarships  
Touche, Ross & Company Scholarships

### Computer Science

Jamie Corbet Memorial Award  
Crowntek Inc. Computer Science Scholarship  
Digital Equipment of Canada Limited Award of Merit  
Honeywell Information Systems Scholarship  
RCA Scholarship

### Engineering

American Society for Metals Award in Engineering  
Association of Professional Engineers' Scholarships  
Dr. John H. Chapman Memorial Prize in Communications Engineering  
Krishnakumar Gopalan Memorial Scholarship  
Hawker Siddeley Canada Ltd. Engineering Scholarship  
Donald G. Loughheed Memorial Scholarship  
Roderick C. McDonald Memorial Scholarship in Engineering  
McNaughton Scholarship  
Ottawa Construction Association Award  
Dr. C. Stewart Parsons Scholarship in Engineering  
Planning and Construction Department of Carleton University's Award in the Building Sciences  
James J. Rattray Memorial Scholarship  
Schlumberger Collegiate Award Scholarship  
Eric Sigurdson Award  
Harry Stevinson Scholarship in Aeronautical Engineering  
Vered Foundation Scholarships  
Wild Leitz Canada Limited Award in Engineering

### Industrial Design

Jack Cook Design Award  
Cooper Canada — George Lynn Design Award  
George A. Lynn Memorial Scholarship

### Journalism

John E. Bird Memorial Scholarship  
Domtar Inc. Scholarship in Journalism  
The Rachael Elizabeth Edwards Memorial Award  
Wilfrid Eggleston Award in Journalism  
Bob Farquharson Memorial Award in Journalism  
Blair Fraser Memorial Award for Journalism Graduates  
Margaret Graham Award  
Judith Johansen Memorial Award  
Journalism Writing Style Book Award  
Kingston Whig-Standard Award in Reporting  
The Charles Lazarus Scholarship  
Maclean-Hunter Award in Journalism  
National Press Club of Canada Scholarship in Journalism  
Frederick C. Nossal Award in Journalism  
Ottawa Citizen Scholarship in Journalism  
Peter Reilly Scholarship  
Roodman Award in Journalism  
Kenneth F. Smith Memorial Award in Journalism  
Carr Suzuki Undergraduate Scholarship  
Setsu Suzuki Scholarship  
Thomson Award for Reporting



Kenneth R. Wilson Memorial Award for Journalism  
Graduates  
Phyllis Wilson Award in Journalism

### Science

Motoshi Asano Memorial Scholarship in Chemistry  
Berke Scholarship in Chemistry  
Dr. M. Ralph Berke Award in Chemistry  
Director's Award in Biochemistry  
Charles Anthony Blundell Betts Memorial Scholarship in Physics  
J.P. Bickell Foundation Scholarships  
Award of the Canadian Institute of Mining and Metallurgy (Ottawa Branch)  
Canadian Society of Petroleum Geologists Undergraduate Student Award  
Society of Chemical Industry Award  
Chemical Institute of Canada Medal  
Chevron Canada Resources Limited Scholarship in Geology  
Catherine Daumery Memorial Award for Botanical Collection  
E. Alison Flood Award in Physical Chemistry  
Ian H. Griffith Memorial Scholarships  
Hewlett-Packard (Canada) Calculator Award  
E.P. (Ted) Hincks Memorial Scholarship in Physics  
E.P. Hincks Award of the Institute of Particle Physics  
Professor James M. Holmes Scholarship in Chemistry  
Janet M. Holmes Memorial Scholarship  
Dr. Harry Katznelson Memorial Scholarship  
Department of Mathematics and Statistics Entrance Award  
Betty Nesbitt Memorial Award in Biology  
H.H.J. Nesbitt Scholarship in Biology  
F.K. North Award in Geology  
Richard J. Semple Memorial Award in Mathematics  
Spectrion Analysis of Trace Elements Inc. Scholarships in Physics  
L.N. Wadlin Scholarship in Mathematics  
Elizabeth White Memorial Award for Zoological Collection  
Morley E. Wilson Scholarship

### Social Sciences

Mrs. George S. Abbott Memorial Award in Law  
Addison-Wesley Award in Law  
Professor T.N. Brewis Scholarship in Applied Economics  
Butterworths Prize in Law  
CCH Canadian Limited Award in Taxation  
Carswell Company Book Award in Public Law  
Victor S. Castledine Scholarship  
Communications Law Prize  
Economics Scholarship  
Anne Smith Freedman Memorial Award  
Mr. and Mrs. Louis L. Goldstein Book Award in Law  
Herbert G. Heron, Q.C. Award in Law  
R.A. MacKay Award in Political Science  
Montreal Trust Company of Canada Award in Law  
Bank of Nova Scotia, Carleton University Branch Award in Commercial Law  
Oxford University Press Award in Law  
Prince Memorial Achievement Award  
Vered Foundation Scholarship  
Jessie and Wreford Watson Award in Geography  
R.A. Wendt Book Prize  
Hume Wrong Scholarship

### Undergraduate In-Course Scholarships for Part-Time Students

Undergraduate University Scholarships  
University Women's Club of Ottawa Scholarships

### Undergraduate Scholarships and Awards

*Mrs. George S. Abbott Memorial Award in Law*  
Value \$50. To be awarded annually for proficiency in law courses taken at Carleton University to a student planning to enter law school. Donor: Anonymous. Established 1968 in memory of Mrs. George S. Abbott.

#### *Addison-Wesley Award in Law*

A prize of ten Addison-Wesley titles awarded annually, on the recommendation of the Department of Law, to a deserving student in a combined program of study, one of the disciplines of which is law. Donor: Addison-Wesley Publishers Limited. Established 1984.

#### *American Society for Metals Award in Engineering*

Value \$100. Awarded annually to an outstanding student with an interest in materials engineering. Donor: Ottawa Valley Chapter, American Society for Metals. Established 1951. Revised 1984.

#### *A. Andras Memorial Grant*

Value \$1,100. To support the cost of a research project or paper undertaken by an undergraduate or graduate student attending Carleton University. This grant is awarded in alternate years for a research project in one of the following areas: (a) Jewish studies; (b) trade union history or the democratic socialist movement in Canada. Endowed 1972 in memory of the late Mr. A. Andras, a member of Carleton's Board of Governors. Revised 1978.

#### *Motoshi Asano Memorial Scholarship in Chemistry*

Awarded annually on the recommendation of the Department of Chemistry to a student in a Chemistry program. Preference shall be given to a full-time student in physical spectroscopy. Donated by the Asano family of Kobe, Japan, in memory of their son, Motoshi Asano, who received his Ph.D. in Physical Chemistry at Carleton in 1983, and who tragically lost his life in a mountain climbing accident two months later. Endowed 1984.

#### *Medal of the Association of Professional Engineers (Ontario)*

Awarded annually, when merited, to the graduating student standing highest in Engineering. Established 1961.

#### *Association of Professional Engineers' Entrance Scholarship*

Value \$750. Awarded annually to a student of high proficiency with senior matriculation standing who is entering the Engineering program. Donor: The Ontario Professional Engineers' Foundation for Education. Established 1961.

#### *Association of Professional Engineers' Scholarships*

Value \$375 each. Three scholarships are awarded annually to Engineering students of high proficiency proceeding from one year of program to another in Carleton University. Donor: The Ontario Professional Engineers' Foundation for Education. Established 1961.

#### *Award of the Embassy of Austria*

For excellence in the study of German, a book award is offered annually by the Austrian Embassy in Canada. Established 1960.

#### *The Honourable Walter Baker Memorial Scholarship in Political Science*

Value \$1,200. Awarded annually on the recommendation of the Department of Political Science to one or more students finishing the Third year of an Honours program. The selection will be made on the basis of high academic standing, with consideration given to demonstrated political leadership or involvement in politics. This scholarship is given in memory of The Honourable Walter Baker,

P.C., Q.C., M.P., B.A., a distinguished graduate of Carleton University. Endowed in 1984 by the friends of the Honourable Walter Baker.

*Frederick William Baldwin Scholarship*

Awarded annually to outstanding students entering or proceeding from one year of program to another at Carleton University. Donor: Estate of Frederick William Baldwin. Endowed 1983.

*Bank of Nova Scotia, Carleton University Branch, Award in Commercial Law*

Value \$100. Awarded annually to a student with high standing in courses in the Commercial Law field. Donor: the Bank of Nova Scotia, Carleton University Branch. Established 1980.

*F. Luella Barrigar Scholarships*

Awarded annually to students entering Carleton University or proceeding from one year of program to another. Some preference shall be given to students with an interest in music. These scholarships are provided through the bequest of the late Miss F. Luella Barrigar, a teacher of music at the Ottawa Teachers' College. Donor: The late F. Luella Barrigar. Endowed 1981.

*Jack Barwick and Douglas Duncan Memorial Scholarship for Art History*

Value \$1,300. Awarded annually to a student or students in the Department of Art History. The Chairman and faculty members of the Department of Art History are to decide each year on the most appropriate disbursement of the award. Donor: Mrs. J.P. Barwick. Endowed 1972.

*Jack Barwick and Douglas Duncan Memorial Scholarship for Music*

Value \$1,300. Awarded annually to a student or students in the Department of Music. The Chairman and faculty members of the Department of Music are to decide each year on the most appropriate disbursement of the award. Donor: Mrs. J.P. Barwick. Endowed 1972.

*Bruce Beecher Memorial Award*

Value \$250. Awarded annually on the recommendation of the Department of English to outstanding student(s) in the Pass or Honours program in English. Donor: Professor Donald A. Beecher. Established 1979.

*Berke Scholarship in Chemistry*

Value \$550. Awarded annually to an outstanding student proceeding to the Second year of an Honours Chemistry program. Donor: Dr. and Mrs. M. Ralph Berke. Endowed 1981.

*Dr. M. Ralph Berke Award in Chemistry*

The yield of a \$500 fund is awarded each year, if merited, on the recommendation of the Department of Chemistry for a prize to be awarded to an outstanding student majoring in chemistry proceeding from the Second to the Third year of the degree program. Donor: Dr. M. Ralph Berke. Endowed 1956.

*Charles Anthony Blundell Betts Memorial Scholarship in Physics*

Value \$1,300. Awarded annually, if merited, to a student of high proficiency in Physics, entering or continuing in Physics Honours or in the Major program, in the Second or subsequent years of the Degree program. Donors: Mr. and Mrs. Oliver Betts, Birmingham, England, in memory of their son, Charles Anthony Blundell Betts. Endowed 1964.

*J.P. Bickell Foundation Scholarships*

The Trustees of the J.P. Bickell Foundation have established in the Department of Geology, Faculty of Science, scholarships for students entering the geological pro-

fession, of a possible value of \$3,000 each. The scholarships may be awarded on entrance into the Honours Geological sequence at the First-, Second- or Third-year levels at Carleton University. The scholarships are payable over two or three years depending on the entrance level.

*John E. Bird Scholarships*

Value \$1,450. Two scholarships are awarded annually to outstanding students who are proceeding from one year of program to another in a Degree program in Journalism. Donor: Estate of Mrs. V. Bird. Endowed 1981.

*Director's Award in Biochemistry*

Value \$100. Awarded annually to the Fourth-year biochemistry student performing the most distinguished Honours Research project. Donor: Anonymous. Endowed 1981.

*Henry Birks and Sons (Ontario) Limited Award*

Value \$25. Awarded annually to a Carleton University student with a superior academic record who has contributed substantially to extracurricular activities. Donor: Henry Birks and Sons (Ontario) Limited. Established 1951.

*Claude Bissell Scholarships*

These scholarships are named in honour of a former President of Carleton University and are awarded to outstanding students proceeding from one year to another of a full-time undergraduate program at Carleton. Established 1975. Revised 1985.

*Professor T.N. Brewis Scholarship in Applied Economics*

Value \$1,000. Awarded annually on the recommendation of the Department of Economics to an undergraduate or graduate student in the department. Preference shall be given to a student who has shown aptitude in the field of applied economics. Professor Brewis was a distinguished member of the Department of Economics at Carleton University for 25 years and is well known for his contributions in the fields of macroeconomic and regional economic policy. Donor: Professor T.N. Brewis. Endowed 1981.

*Claude Brunelle Memorial Scholarship*

Awarded annually on the recommendation of the Institute of Soviet and East European Studies to the student with the highest standing among those proceeding from the Third to the Fourth year of the undergraduate program. Donors: Family, friends and colleagues of the late Claude Brunelle, a former student of the Institute. Endowed 1985.

*Donald William Buchanan Scholarship*

Awarded annually for general competition among students entering Carleton University. Donor: The late Donald William Buchanan. Endowed 1967.

*Landen Dominic Burnett Memorial Award*

Value \$300. Awarded annually to an outstanding student in Art History selected by the Chairman of the Department of Art History. Donor: The Vered Foundation. Established 1979.

*Butterworths Prize in Law*

A prize of \$250 and an additional \$100 in Butterworths' publications awarded annually, on the recommendation of the Department of Law, to a deserving student pursuing studies in law at Carleton. Donor: Butterworths & Co. (Canada), Limited. Established 1984.

*D. Roy Campbell Scholarship*

Awarded annually, under the terms of the will of the late D. Roy Campbell, for competition among students entering Carleton University with high standing in the senior matriculation examinations or the equivalent. Donor: The late D. Roy Campbell. Endowed 1962.



*Henry Campbell Scholarships*

Value \$2,300. Two scholarships awarded annually to full-time students entering or progressing from one year to the next at Carleton University. Provided from the estate of the late Edna Alice Campbell. Endowed 1978.

*Award of the Canadian Institute of Mining and Metallurgy (Ottawa Branch)*

Value \$500. The cash prize mentioned is available annually for an essay submitted by full-time undergraduate students at Carleton University and University of Ottawa only. This cash prize is for the best essay on a subject appropriate to any one of the Institute's technical divisions, namely the Coal Division, the Geology Division, the Industrial Minerals Division, the Mechanical/Electrical Division, the Metallurgical Society, the Metal Mining Division and the Petroleum Society of CIM. For the purpose of this competition, an undergraduate student may be one who is registered in the Second, Third or Fourth year of an undergraduate program at the time the essay is submitted. Essays must be submitted to the Chairman of the Geology Department of Carleton or University of Ottawa on or before December 31 of each year. Essays need not be papers prepared exclusively for this competition. They may incorporate in part or entirely other papers presented by students as academic exercises. The use of field data or field observations collected by the student during Summer employment is recommended. Established 1956 and 1974.

*Canadian Society of Petroleum Geologists Undergraduate Student Award*

An award, consisting of a certificate and one-year student membership in the Canadian Society of Petroleum Geologists, is given by the society on the recommendation of the Department of Geology, to an undergraduate student who has excelled in fields relating to petroleum geology. Established 1978

*Canadian Tire Corporation Scholarship*

Value \$500. Awarded annually on the recommendation of the Director of the School of Business to an outstanding student proceeding from one year of program to another in Business. Preference will be given to a student who shows ability in the areas of management studies and marketing. Donor: Canadian Tire Corporation Limited. Established 1980.

*Carleton Beaverbrook Awards for Freedom of the Press*

Value \$200. Awarded annually, on the recommendation of the Chairman of the Department of History, to a student enrolled in a history course who submits the best essay that addresses the topic of freedom of the press and/or the right of access to the use of this medium by individuals and organizations. A case history method study will be favoured over a generalized essay. The award(s) will be provided from interest generated by The John Hanson Fund. Donor: J. Carlisle Hanson, Q.C. Endowed in 1982 in honour of John Hanson, a Canadian pioneer who, during his lifetime (1739-1820), established a settlement at Chamcook Island, New Brunswick.

*Carleton University Academic Staff Association Scholarship*

Value \$1,100. Awarded annually to a student of high proficiency proceeding from one year of program to another in undergraduate studies at Carleton University. Donor: Carleton University Academic Staff Association. Established 1977.

*Carleton University Awards in English*

Value \$1,000. Awarded annually to students from Ottawa area high schools. Prizes will be given in two categories. The writing award will be given for one of the

following: a play of at least 30 minutes running time; a sheaf of poems; a minimum of at least three short stories (no maximum); or a novel. The essay award will be given for an essay of a length to be determined annually by the Department. Candidates may contact the Carleton University Department of English for terms of the prizes, though information will be sent yearly to the English Departments of all high schools in the area. In each category, the judges will award a first prize of \$200, a second prize of \$100 and four third prizes of \$50, unless they deem entries to be of insufficient calibre. Donor: Anonymous. Established 1981. Revised 1985.

*Carling O'Keefe Scholarship*

Value \$600. Awarded annually to an outstanding full-time student who is proceeding from one year of program to another at Carleton University. Donor: The O'Keefe Brewing Company Limited. Established 1972.

*Carswell Company Book Award in Public Law*

Value \$100. Awarded annually to a student with high standing in public law courses. Donor: The Carswell Company Limited. Established 1965.

*Victor S. Castledine Scholarship*

Value \$500. Awarded annually to a student in Economics or Business who, in the opinion of the Chairman of the Department of Economics in counsel, has done outstanding work in the area of money, credit and banking studies. Donor: Victor S. Castledine, Esq. Endowed 1971.

*CCH Canadian Limited Award in Taxation*

A one-year's subscription to CCH's seven-volume *Canadian Tax Reports* awarded annually, on the recommendation of the Department of Law, to the student achieving the highest grades in tax law courses. Donor: CCH Canadian Limited. Established 1984.

*Certified General Accountants Association of Ontario Award for Excellence*

Value \$1,000. An annual award for excellence is given on the recommendation of the Director of the School of Business to a student graduating from Carleton University who has displayed outstanding achievement in accounting. The award is composed of a cash award of \$150 plus a credit of \$850 to be drawn down as and when the successful candidate wishes, for the purpose of defraying any fees related to courses in the CGA study program. The first drawdown on the credit must be made not later than three years after the date of notification to the successful candidate. Thereafter, the credit will be valid as long as the person is enrolled in the CGA program in Ontario. Donor: The Certified General Accountants Association of Ontario. Established 1981.

*The Chancellor's Scholarships*

Three scholarships with a total possible value of \$10,000 over four years (\$4,000, \$3,000, \$2,000 and \$1,000). The scholarships may be continued each year of full-time enrolment, provided the student maintains A standing. These scholarships require an application which must be completed and returned to the Awards Office by May 14. Priority will be given to academic performance and the committee will also consider the applicant's other interests and activities during secondary school.

*Dr. John H. Chapman Memorial Prize in Communications Engineering*

Value \$1,500. Awarded annually, on the recommendation of the Faculty of Engineering, to a student proceeding from Third to Fourth year who has demonstrated an interest in telecommunications and displays great promise in this field. This scholarship is provided by Spar Aerospace Limited in honour of Dr. John H. Chapman, who is



widely regarded as the father of the Canadian space program. Established 1981. Revised 1985.

*Society of Chemical Industry Award*

A gold key with the crest of the Society of Chemical Industry in front and the name of the winner, course, year and university on back is granted to the student who has the highest standing in the final year of the Honours program in Chemistry. The winner will also receive a year's subscription to the Journal, *Chemistry and Industry*. Donor: Canadian Section, Society of Chemical Industry. Established 1961.

*Chemical Institute of Canada Medal*

Awarded annually to the student obtaining the highest academic standing in the penultimate year in the Honours Chemistry program. Established 1950. Revised 1983, 1985.

*Chevron Canada Resources Limited Scholarship in Geology*

Value \$1,000. Awarded annually to an outstanding undergraduate student who is entering the final year in Geology at Carleton University. Preference will be given to a student who has displayed an indicated interest in the field of petroleum exploration. Donor: Chevron Standard Limited. Established 1980.

*CHEZ-FM Research Award(s) in Mass Communication*

Value \$600 annually. To support the cost of Honours Research Project(s) in the Mass Communication program. The award(s) will be given to project(s) on radio broadcasting and issues related to broadcast regulation generally. The recipient(s) will be determined annually on the recommendation of a panel selected by the Associate Director (Mass Communication) of the School of Journalism in conjunction with the donor. Donor: CHEZ-FM Inc. Established 1984.

*Clarkson, Gordon & Company Award*

Value \$100. Awarded annually to the student with the highest standing in the First year of the Business program. Donor: Clarkson, Gordon & Company. Established 1962.

*Class of '76 Award*

An award (or awards) given on the recommendation of the Director of the School of Business for excellence in the study of accounting and/or finance. Donor: Members of the class of '76. Endowed 1980.

*Commonwealth Holiday Inns of Canada Limited Entrance Scholarship*

Value \$250. Awarded annually to a student entering a full-time undergraduate program who has completed the Ontario Secondary School Honour Graduation Diploma (or its equivalent) and has demonstrated a high potential for university studies. Donor: Commonwealth Holiday Inns of Canada Limited. Established 1975.

*Communications Law Prize*

Awarded annually on the recommendation of a panel comprised of selected members of faculty who specialize in communications law, for excellence in the study of broadcast, press and telecommunications law. Donor: Leonard M. Bellam. Endowed 1983.

*Duchess of Connaught Scholarship*

The yield from the endowment of this historic scholarship has been made available to Carleton University by the Laurentian Chapter, I.O.D.E. The scholarship is to be awarded to an able student entering Carleton University, and may be held until graduation if merited, at which time a new award will be made. Donor: Laurentian Chapter I.O.D.E. Endowed at Carleton University 1960.

*Jack Cook Design Award*

Value \$100. Awarded annually, if merited, to the student in Third or Fourth year of the School of Industrial Design who submits the most outstanding design of a product or project related to the field of interior design. Donor: Mr. Jack Cook. Established 1978.

*Naomi Cook Scholarship Fund*

Value \$600. Awarded annually to students with high academic standing entering Carleton University. Donor: The late Naomi Cook. Endowed 1967.

*Cooper Canada — George Lynn Design Award*

Value \$1,500. Awarded annually to the Fourth-year Industrial Design student whose design research proposal is found most meritorious by the School. Established in memory of the late George A. Lynn, Associate Professor of Industrial Design, who, before his appointment to Carleton University, was Director of Design at Cooper Canada Limited. Donor: Cooper Canada Limited. Established 1985.

*Michael Russell Coote Memorial Award*

Awarded annually, on the recommendation of the Director of the School of Architecture, to a promising student who has successfully completed First year in the School of Architecture. Donors: Friends, family and colleagues of the late Michael R. Coote. Endowed 1983 in memory of Michael R. Coote, a member of the faculty since 1970 and Director of the School of Architecture from 1978 to 1982.

*Jamie Corbet Memorial Award*

Value \$550. Awarded annually, on the recommendation of the School of Computer Science, to an outstanding student who is proceeding from one year to another in the School of Computer Science. Donor: Friends and family of the late Jamie Corbet. Endowed 1981.

*Jennie Shibley Cramm Scholarship*

Value \$275. Awarded annually to a female student of high proficiency entering Carleton University from Nepean High School, Ottawa. Donor: The late Jennie Shibley Cramm. Endowed 1967.

*W.H. Cramm Scholarship*

Value \$275. Awarded annually to a male student of high proficiency entering Carleton University from Nepean High School, Ottawa. Donor: The late Jennie Shibley Cramm. Endowed 1967.

*Crowntek Inc. Computer Science Scholarship*

Value \$500. Awarded on the recommendation of the Director of the School of Computer Science to an outstanding Third-year Honours student based on marks attained in all Computer Science courses. Some preference may be given to the individual's all-round leadership in extra-curricular activities. Donor: Crowntek Inc. Established 1981. Revised 1984.

*Catherine Daumery Memorial Award for Botanical Collection*

Value \$50, together with a book prize. Awarded annually, if merited on the recommendation of the Department of Biology, to a student who has submitted by November 1, an outstanding collection of mounted and identified flowering plants. Donor: Anonymous. Established 1953.

*Bertha F. Davis Award in Religion*

Value \$400. Awarded annually to an outstanding student enrolled in the Major or Honours program in the Department of Religion at Carleton University. Donor: Bertha Florence Davis. Endowed 1977.

*Jack Deutsch Memorial Masonry Award*

Value \$500. Awarded every three years to the Carleton



Architecture student who, in the past three years, has had the highest grade-point average in technical subjects (including the grade given for the application of technology in the Second-year studio design program). This award is given in rotation to the three schools in Ontario offering the Bachelor of Architecture degree. Donor: Ontario Masonry Contractors Association. Established 1983.

*De Waan Foundation Award on Arab Problems*

Each year for a period of five years from the first year of award, the De Waan Foundation offers a prize for work of appropriate scholarly level by a senior student on the problems of Arab countries. Annual value, \$100. Students wishing to prepare for this award should first consult the Director of the School of Public Administration. Donor: De Waan Foundation, 1960.

*Digital Equipment of Canada Limited Award of Merit*

Value \$200 and medal. An award is given annually to the student who stands first in the course Engineering 94.303★, Real Time Computing Systems. Donor: Digital Equipment of Canada Limited. Established 1981.

*Dobbie Regional Entrance Scholarship*

Scholarships will be available for students entering Carleton University, to be divided equally among students from Ontario (except for the City of Ottawa), the Western provinces and the Territories, and Quebec and the Atlantic provinces. Donor: The late Jemema Grace Dobbie. Endowed 1967.

*Domtar Inc. Scholarship in Journalism*

Value \$1,000. This scholarship is awarded annually, on the recommendation of the School of Journalism, to an outstanding student proceeding from Second to Third year in the four-year Bachelor of Journalism program. Donor: Domtar Inc. Established 1985.

*Lord Dundonald Chapter, I.O.D.E. Scholarship*

Value \$200. Awarded annually to a student of superior standing and general proficiency, entering the final year of a degree program at Carleton University. Donor: Lord Dundonald Chapter, I.O.D.E. Established 1956.

*A. Davidson Dunton Scholarships*

These scholarships are named in honour of a former President of Carleton University and are awarded to outstanding students proceeding from one year to another of a full-time undergraduate program at Carleton. Established 1975. Revised 1985.

*Economics Scholarship*

Value \$750. Awarded to the student or students entering the final year of the Honours program of studies, whose record of scholarship, in the opinion of the Department of Economics Scholarship Committee, merits special recognition. Established 1978.

*Samuel L. Edelson Scholarship*

Value \$250. Awarded annually to an outstanding student who is proceeding from one year of program to another at Carleton University. Donor: Members of the family. Established 1974.

*Rachael Elizabeth Edwards Memorial Award*

Value \$510. Presented annually on the recommendation of the School of Journalism to an outstanding student who is graduating in the School of Journalism one-year Degree program. Preference will be given to a female student who has indicated an interest in pursuing a career in the daily newspaper field. Endowed 1974 in memory of Rachael Elizabeth Edwards, a former student in the School of Journalism.

*Wilfrid Eggleston Award in Journalism*

Value \$500. Awarded to the undergraduate with the best record in the Second-year Journalism Degree program. This award is named in honour of Professor Emeritus Dr. Wilfrid Eggleston, former Director of the School of Journalism. Donor: Anonymous. Established 1967.

*Bob Farquharson Memorial Award in Journalism*

Value \$575. Awarded annually to an outstanding student enrolled in a full-time undergraduate program in the School of Journalism at Carleton University. Preference will be given to a Third-year student who has indicated an interest in pursuing a career in newspaper and magazine journalism. Donors: Canadian Managing Editors Conference and the Toronto Globe and Mail. Endowed 1980.

*George Fierheller Scholarships*

These scholarships are named in honour of a former Chairman of the Board of Governors of Carleton University and are awarded to outstanding students proceeding from one year to another of a full-time undergraduate program at Carleton. Established 1975. Revised 1985.

*E. Alison Flood Award in Physical Chemistry*

Value \$400. Awarded annually to the best student in the Second-year physical chemistry course. The recipient is selected by the Department of Chemistry on the basis of recommendations of the course instructor and the laboratory demonstrators in the Second-year laboratory. Donors: Friends and former students of the late Dr. E.A. Flood, a principal scientist at the National Research Council, who in 1969 became a senior demonstrator in the Department of Chemistry. Endowed 1980.

*Lilian I. Found Award for Poetry*

Value \$25. Offered annually for the best lyric of 50 lines or less submitted by an undergraduate of Carleton University by March 15. Details may be obtained from the Department of English. Donor: The late Mrs. Lilian I. Found. Endowed 1950.

*Awards of the Embassy of France*

For excellence in the study of French, two book awards are offered annually by the Embassy of France in Canada. Donor: Embassy of France. Established 1978.

*Blair Fraser Memorial Award for Journalism Graduates*

Value \$400. Offered annually to a Journalism student in his or her graduating year who, in the opinion of a board of selection, shows a marked aptitude for and interest in political reporting at the national and international level. Endowed 1969 in memory of Blair Fraser, Ottawa editor of *Maclean's Magazine*, by a group of his friends.

*Anne Smith Freedman Memorial Award*

Value \$180. Awarded to the student in Psychology who has written the best experimental honours thesis in psychology during the academic year. Donor: Mr. Jarvis Freedman. Established 1958. Revised 1984.

*Jacob Freedman Scholarships*

Awarded annually to outstanding students who are proceeding from one year of program to another at Carleton University. Donor: The late Jacob Freedman. Endowed 1967.

*Department of French Book Awards*

Four book awards are given annually, two from the Embassy of France and two from the Librairie de la Capitale, on the recommendation of the Department of French. The awards are open to undergraduate and graduate specialists in French. Donors: Embassy of France and Librairie de la Capitale. Established 1983.



#### *Department of French Scholarship*

Value \$200. Awarded annually to an outstanding student entering Second or Third year in a Major or Honours program in French. Donors: Members of the Department of French. Established 1984.

#### *Friends of Carleton Scholarships*

Scholarships have been provided for general competition among students entering Carleton University at the senior matriculation level. Donor: The Friends of Carleton University. Established 1967.

#### *Awards of the Embassy of the Federal Republic of Germany*

For excellence in the study of German, book awards are offered annually by the Embassy of the Federal Republic of Germany in Canada. Established 1955.

#### *Clarence C. Gibson Scholarships*

These scholarships are named in honour of a former Chairman of the Board of Governors of Carleton University and are awarded to outstanding students proceeding from one year to another of a full-time undergraduate program at Carleton. Established 1975. Revised 1985.

#### *James A. Gibson Scholarships*

Scholarships have been provided for superior students passing into the final year of an undergraduate program at Carleton University. The scholarships are named in honour of Dr. James A. Gibson, former Dean of Faculty of Arts and Deputy to the President of Carleton University. Donor: Carleton University.

#### *Glengarry Book Prize*

Value \$100 gift certificate redeemable at the Carleton University Bookstore. Awarded annually by the Residence University Management and Policy Board to the residence student enrolled in full-time undergraduate studies who has achieved the highest grade-point average among residence students returning from the previous year, and who is not currently in receipt of another academic award from the University. Donor: Residence University Management and Policy Board. Endowed 1983.

#### *David A. Golden Scholarships*

These scholarships are named in honour of a former Chairman of the Board of Governors of Carleton University and are awarded to outstanding students proceeding from one year to another of a full-time undergraduate program at Carleton. Established 1975. Revised 1985.

*Louis and Miriam Goldstein Book Award in Judaic Studies*  
Awarded annually to a deserving Carleton University student in Judaic studies, on the recommendation of the Department of Religion. Donors: Louis and Miriam Goldstein. Established in 1983 in honour of Carleton University's Fortieth Anniversary.

#### *Mr. and Mrs. Louis L. Goldstein Book Award in Law*

Awarded annually to a deserving Carleton University student in a Law program, on the recommendation of the Chairman of the department. Donors: Mr. and Mrs. Louis L. Goldstein. Established 1975.

#### *Krishnakumar Gopalan Memorial Award*

Awarded annually to the Fourth-year student standing highest in the Mechanical Engineering program. Established in memory of Krishnakumar Gopalan, the top graduating student of the class of 1985 in the Mechanical Engineering program, who lost his life tragically within days of graduation. Donor: Friends of the late Krishnakumar Gopalan. Endowed 1985.

#### *Margaret Graham Award*

Value \$200. Awarded annually to the undergraduate student with the best overall academic average proceeding from Third to Fourth year of the four-year Bachelor of Journalism program. This award is named in honour of Margaret Graham, who was one of the founding members of the Canadian Women's Press Club in 1904. Donor: The Media Club (Ottawa Branch). Established 1977.

#### *J. Lorne Gray Scholarships*

These scholarships are named in honour of a former Chairman of the Board of Governors of Carleton University and are awarded to outstanding students proceeding from one year to another of a full-time undergraduate program at Carleton. Established 1975. Revised 1985.

#### *Ian H. Griffith Memorial Scholarships*

Value \$1,300. Awarded annually, if merited, to outstanding students proceeding from one year to another of a degree program in the Faculty of Science, preferably in the Integrated Science Studies program, and having some appreciation of the humanities. Donors: Mr. and Mrs. J. Griffith in memory of their son Ian H. Griffith, B.Sc., Carleton 1976.

#### *Peter Gerard Harris Memorial Award*

Awarded annually on the recommendation of the School of Journalism to an outstanding student in the Third year of the Mass Communication program. Endowed 1985 by the family and friends of Peter G. Harris, a Carleton student who was named to the Deans' Honour List in June 1984, and who died tragically two months later.

#### *Hawker Siddeley Canada Inc. Engineering Scholarship*

Value \$850. Awarded on the recommendation of the Faculty of Engineering to an outstanding student proceeding from the Third to the Fourth year in Electrical or Mechanical Engineering. Donor: Hawker Siddeley Canada Inc. Established 1975.

#### *Herbert G. Heron, Q.C. Award in Law*

Value \$300. Awarded annually to a student in the Department of Law. Applicants and nominees for this award will be assessed by the Chairman of the Department of Law in conjunction with his or her committee. Established 1975 in memory of Herbert G. Heron, Q.C.

#### *Gerhard Herzberg Scholarships*

These scholarships are named in honour of a former Chancellor of Carleton University and are awarded to outstanding students proceeding from one year to another of a full-time undergraduate program at Carleton. Established 1975. Revised 1985.

#### *Hewlett-Packard (Canada) Calculator Award*

A prize consisting of a programmable calculator, awarded to a student with high academic standing entering the final year in the Faculty of Science. Granted on the basis of high academic standing and demonstrated excellence in sciences and computer science. Awarded annually on the recommendation of the Dean of Science. Donor: Hewlett-Packard (Canada) Ltd. Established 1984.

#### *E.P. (Ted) Hincks Memorial Scholarship in Physics*

Awarded annually, on the recommendation of the Department of Physics, to a student showing high proficiency in Physics and proceeding from one year to another of a full-time undergraduate program in Physics or in Physics and an allied discipline. Established in 1984 in memory of the late Professor E.P. (Ted) Hincks, D.Sc. (Carleton), F.R.S.C., former chairman of the Department of Physics and a pioneer in the area of high-energy physics.



*E.P. Hincks Award of the Institute of Particle Physics*

Value \$300. Awarded annually on the recommendation of the Department of Physics to an outstanding student in an Honours, Combined Honours, or Double Honours program in Physics at Carleton University. Donor: The Institute of Particle Physics. Established in 1984 in honour of the Institute's founding President, E.P. (Ted) Hincks, D.Sc., F.R.S.C. The late Professor Hincks played a seminal role in the development of high-energy physics in Canada and was a Chairman of the Department of Physics at Carleton University.

*Professor James M. Holmes Scholarship in Chemistry*

Awarded annually to an outstanding student proceeding from the Second to the Third year of an Honours Chemistry program. Donors: Friends and former students of Professor James M. Holmes. Endowed 1984.

*Janet M. Holmes Memorial Scholarship*

Value \$300. Awarded annually, when merited, to a promising student proceeding from the Third to the Fourth year of the Honours Chemistry program at Carleton University. Candidates will be selected by the Department of Chemistry. Donors: Professor and Mrs. J.M. Holmes. Established July 1973.

*Honeywell Information Systems Scholarship*

Value \$1,000. Awarded annually, when merited, to a student or students for proficiency in Computer Science. Donor: Honeywell Information Systems. Established 1979.

*C.V. Hotson Memorial Scholarship*

Value \$500. Awarded annually to an undergraduate student who maintains high academic standing and is active in student affairs. Donated by Carleton alumni and other friends in memory of Mr. Hotson, a 1950 Carleton Journalism graduate and former member of the Students' Council who returned to Carleton in 1953 to become administrative assistant to the president and executive secretary of the Alumni Association, a position he held until his death in October, 1960.

*Sara Helen Parry Hughes Travel Award*

Value \$2,000. Awarded at the discretion of the Department of Spanish to a good student taking the Department's Winter Programme Abroad, to assist with his or her travel cost. Given in memory of Sara Hughes, a gifted student in Spanish who was tragically killed in an accident at Gravenhurst, August 1984. The gift of her family and friends, 1984.

*Award of the High Commission of India*

For excellence in the study of Sanskrit, a book award is offered annually by the High Commission of India. Established 1976.

*International House Award*

Value \$115. Awarded to a student in his or her graduating year attending Carleton University on a student visa who, in addition to maintaining the academic levels of the degree program, has been an active participant in extra-curricular activities in the University. Donor: International House. Endowed 1972.

*Allama Mohammad Iqbal Award*

Value \$250. Awarded annually on the recommendation of the Department of Religion to an undergraduate student who has shown excellence in the field of Islamic studies. Donor: The Government of Pakistan. Endowed 1982.

*Award of the Embassy of Italy*

For excellence in the study of Italian, a book award is offered annually by the Embassy of Italy in Canada. Established 1971.

*Judith Johansen Memorial Award*

Value \$260. Awarded annually on the recommendation of the School of Journalism to the Third-year Journalism student who submits the best series of interpretative reports during the academic year. Endowed in 1982 by friends, fellow students and teachers of Judith Johansen, B.J. 1970 and candidate for the degree of M.J.

*Journalism Writing Style Book Award*

Value \$50. Awarded annually as a book prize to a Journalism 28.220 student, the writing style of whose class assignments shows exceptional merit. Donor: Anonymous. Endowed 1970.

*Dr. Harry Katznelson Memorial Scholarship*

Value \$100. Awarded annually to an outstanding student proceeding into an advanced year in the Honours Biology program. Donors: Friends of the late Dr. Harry Katznelson, B.S.A., M.Sc., Ph.D., F.R.S.C., Director of the Microbiology Research Institute, Federal Department of Agriculture. Established 1965.

*Marston LaFrance Memorial Award in English*

Value \$750. Awarded annually, if merited, on the recommendation of the Department of English to outstanding student(s) entering the Fourth year of the Honours English program at Carleton University. Endowed 1976 in memory of the late Dr. Marston LaFrance, former Dean of the Faculty of Arts, Division I.

*The Charles Lazarus Scholarship*

Awarded annually on the recommendation of the School of Journalism to a First-year Journalism student showing all-round academic excellence. Endowed in 1985 by the family of Charles Lazarus, in his honour.

*Abraham and Dora Lithwick Prize*

Value \$50. Awarded annually for ten years to a hand-capped student at Carleton University. Donor: Mrs. Dora Lithwick. Endowed 1981.

*Harold Lithwick Memorial Scholarship*

Value \$300. Awarded annually to a disabled student enrolled in a program at Carleton, who has completed at least three credits towards a degree. Donor: Mrs. Sarah Lithwick Green. Established 1982.

*Donald G. Loughheed Memorial Scholarship*

Value \$2,500. Awarded annually on the recommendation of the Faculty of Engineering to an outstanding student proceeding from one year to another of a full-time undergraduate program in Engineering. Donor: Leigh Instruments. Established 1985.

*Francis C.C. Lynch Scholarships*

Scholarships have been established for open competition among students entering or proceeding from one year to another in Arts, Social Sciences, Science, Business, Journalism, Engineering or Architecture. Donor: The late Francis C.C. Lynch. Endowed 1967.

*George A. Lynn Memorial Scholarship*

Awarded annually on the recommendation of a jury appointed by the Director of the School of Industrial Design, for excellence in the design of medical equipment. Donors: The friends and family of the late George A. Lynn. Professor Lynn was a well known Canadian industrial designer who, as one of the first Professors of Industrial Design, was a member of the faculty from 1975 until his untimely death in 1983. Endowed 1984.

*Macdonald Club Awards in English*

Value \$500 each. Awarded annually on the recommendation of the Department of English to two outstanding students in the Pass or Honours program in English who have demonstrated a special interest in the



creative arts. Donor: The Macdonald Club, a private club created to support and encourage the creative arts. Established 1981.

*Gavin Scott Macfarlane Memorial Scholarship*

Value \$750. Awarded annually to an outstanding student, preferably in Honours, who is proceeding from one year of program to another at Carleton University. First donated in 1957 by Mrs. G.S. Macfarlane in memory of her husband, Lieutenant-Colonel Gavin Scott Macfarlane.

*R.A. MacKay Award in Political Science*

Value \$250. Awarded annually by the Department of Political Science to a student in good standing in accordance with terms that the Department may from time to time establish. Donor: The late Dr. R.A. MacKay. Endowed 1977.

*Chalmers Jack Mackenzie Scholarships*

These scholarships are named in honour of a former Chancellor of Carleton University and are awarded to outstanding students proceeding from one year to another of a full-time undergraduate program at Carleton. Established 1975. Revised 1985.

*Maclean-Hunter Award in Journalism*

Value \$1,000. Awarded annually to a student entering the one-year program in Journalism for university graduates, mainly on the basis of previous academic performance. Donor: Maclean-Hunter Publishing Company Limited. Established 1967.

*Murdoch Maxwell MacOdrum Scholarships*

These scholarships are named in honour of a former President of Carleton University and are awarded to outstanding students proceeding from one year to another of a full-time undergraduate program at Carleton. Established 1975. Revised 1985.

*Manufacturers Life Scholarship in Business*

Value \$1,000. Awarded annually to an outstanding student entering the Bachelor of Commerce program at Carleton University. Donor: The Manufacturers Life Insurance Co. Established 1976.

*Department of Mathematics and Statistics Entrance Award*

Value \$500. One or more annual awards for a student or students entering the First year of an Honours or Major program in the Department of Mathematics and Statistics at Carleton University. The selection of the recipient or recipients will be based on the results of an annual Competition for High School students, with the decision being recommended by the Chairman of the Department in consultation with the Director of Student Awards and the Department's High School Liaison Committee. Donors: Members of the faculty in the Department of Mathematics and Statistics. Established 1973.

*Roderick C. McDonald Memorial Scholarship in Engineering*

Value \$300. Awarded annually to an Engineering student of high proficiency entering the Fourth year of program. Established by the University in memory of the late Roderick C. McDonald who, before his death in 1961, was a member of the Faculty of Engineering.

*R.L. McDougall Award in English*

Value to be announced. Awarded annually to an outstanding student in the Pass or Honours program in English. This award was established by friends, family and colleagues of Rob McDougall in recognition of his 25 years of service as a distinguished member of the Department of English and especially for his contribution as teacher, scholar and administrator in the field of Canadian studies. Endowed 1983.

*D.F. McKechnie Award in Accounting*

A book prize awarded, when merited, to a student in business for proficiency in the study of accounting. Donor: D.F. McKechnie, C.A. Endowed 1951.

*Violet McLaughlin Scholarship*

Awarded annually to students entering or proceeding from one year to another at Carleton University. This fund was given by the late Violet McLaughlin, a resident of Ottawa, in memory of St. Patrick's College. Endowed 1984.

*McNaughton Scholarship*

A sum equal to tuition fees is awarded annually to an outstanding student entering the Third year of the Engineering program who is a member of the Institute of Electrical and Electronic Engineers (IEEE) branch at Carleton. Established in honour of the late General Andrew G.L. McNaughton, scientist, soldier, politician, diplomat, and the inventor of the cathode-ray direction finder. The selection of the recipient will be made by the Faculty of Engineering. Donor: International Electrical, Electronics Conference (IEEC), Inc. Established 1985.

*Dr. Frederick William Charles Mohr Scholarships*

Scholarships have been made available for annual competition among students entering Carleton University or proceeding from one year of program to another and who come from communities within the following Ontario and Quebec counties: Ontario: Renfrew, Russell, Prescott, Glengarry, Stormont, Dundas, Grenville, Carleton, Lanark, Nipissing, Leeds; Quebec: Pontiac, Gatineau, Hull, Papineau, Argenteuil, Temiskaming. These awards are provided through the bequest of the late Dr. F.W.C. Mohr. Donor: The Frederick W.C. Mohr Estate. Endowed 1963.

*Music Department Award*

For the encouragement of a student displaying early excellence in music studies, an award is offered annually to the student registered in the B.A. (Music) or B.Mus. program displaying the best performance in the first three required music courses, excluding Music 30.195★. Donor: Anonymous. Endowed 1983.

*Jayashree A. Nagpur Memorial Award*

Value \$50. Awarded annually on the recommendation of the Department of English to an outstanding student in the English program at Carleton University. Donor: Anant L. Nagpur. Established 1976.

*National Council of Jewish Women of Canada Award*

Value \$100. Awarded on the recommendation of the Department of Religion to a student achieving high standing in the area of Judaic studies. Donor: National Council of Jewish Women of Canada, Ottawa Section. Established 1973.

*Betty Nesbitt Memorial Award in Biology*

Value \$775. Awarded annually to a student entering the Third year of a Bachelor's Degree program in Biology, who, in the opinion of the Department has shown exceptional promise in the field of biology. Preference will be given to a student in a faculty other than the Faculty of Science. Donors: Friends of the late Mrs. H.H.J. Nesbitt. Endowed 1976.

*H.H.J. Nesbitt Scholarship in Biology*

Value \$150. Awarded annually to an outstanding student proceeding from the Third to Fourth year of the Honours program in Biology at Carleton University. Established 1951, in memory of Mr. and Mrs. T.E. Glendinnen, by their daughter.

*James Nolan Memorial Award*

Value \$825. Awarded annually to a student in Business, for proficiency in the study of accounting. Donors: The



family and friends of the late James P. Nolan, B.Com. Carleton 1977. Endowed 1977.

*F.K. North Award in Geology*

A book is awarded annually, on the basis of outstanding performance, to a student in final year of the Honours Geology program at Carleton University. This award was provided by friends and colleagues of Ken North, in recognition of his 19 years of service as a renowned teacher of geology at Carleton University, and in particular recognition of his timely and articulate statements that led to careful re-evaluation of Canada's petroleum reserves. Donors: Friends and colleagues of Dr. North. Endowed 1981.

*Frederick C. Nossal Award in Journalism*

Value \$1,200. Awarded annually to the student graduating from the Four-year Bachelor of Journalism program with the best academic record over the entire program. This award is provided in honour of Frederick C. Nossal who, as a foreign correspondent for *The Globe and Mail*, established its Far Eastern Bureau in Peking in 1959. Donors: The children of Frederick C. Nossal: Kim, Nicole, Michelle and Shane Nossal. Established 1984.

*Michael Oliver Scholarships*

These scholarships are named in honour of a former President of Carleton University and are awarded to outstanding students proceeding from one year to another of a full-time undergraduate program at Carleton. Established 1975. Revised 1985.

*Ontario Association of Architects Awards*

Value \$2,000. Awarded annually to a deserving student enrolled in the Second year of the School of Architecture program an award of \$1,000; and to a deserving student enrolled in the Third year of the School of Architecture program an award of \$1,000. Donor: Ontario Association of Architects. Established 1972.

*Ontario Credit Union Charitable Foundation Award*

Value \$250. Awarded annually, on the recommendation of the School of Business, to a Canadian citizen or permanent resident proceeding from one year to another in the Bachelor of Commerce program. Priority shall be given to students of academic merit who are also in financial need. Donors: Ontario Credit Union Charitable Foundation. Established 1985.

*Bettina Oppenheimer Memorial Scholarship in Music*

Value \$1,000. Awarded annually on the recommendation of the Department of Music to an academically outstanding student within six credits of completion of the Bachelor of Music degree. Donor: E.M. Oppenheimer. Endowed 1982.

*City of Ottawa Scholarship for Disabled Persons*

Value \$1,000. Awarded annually to a disabled student entering or enrolled in a full-time program of studies at Algonquin College of Applied Arts and Technology, Carleton University or the University of Ottawa. The award may be continued for up to four years, provided the candidate maintains satisfactory academic standing. Applicants for the scholarship must be disabled, according to the United Nations definition. Priority shall be given first to students of academic merit and second, for financial need. Donor: City of Ottawa. Established 1981.

*Ottawa Citizen Scholarship*

A scholarship valued at \$2,400 awarded annually, if merited, to a student entering Carleton University from a high school in any one of the following counties in the Ottawa district: nine in Ontario (Carleton, Dundas, Glengarry, Grenville, Lanark, Prescott, Renfrew, Russell and Stormont) and four in Quebec (Gatineau, Hull, Papineau

and Pontiac). A student admitted with senior matriculation standing will receive \$800 per year for a period of three years, always provided that the student is registered as a regular full-time student at Carleton University and maintains a satisfactory academic standing. Donor: The Ottawa Citizen. Established 1955.

*Ottawa Citizen Scholarship in Journalism*

Maximum value \$2,400. Awarded annually to a student entering First year of Journalism. The winner will receive \$600 a year until graduation provided the student is registered as a full-time student at Carleton University and maintains a satisfactory academic standing in the Journalism program. Donor: The Ottawa Citizen. Established 1969.

*Ottawa Construction Association Award*

Value \$500. Awarded annually on the recommendation of the Department of Civil Engineering to a student (or students) with outstanding performance in construction management. Donors: Ottawa Construction Association. Established 1985.

*Ottawa Ladies' College Scholarships*

Provided for annual competition among undergraduates for the various disciplines. Endowed 1967.

*Ottawa Muslim Women's Auxiliary Award*

A book is awarded annually on the recommendation of the Department of Religion to a student achieving high standing in the area of Islamic studies. Donor: The Ottawa Muslim Women's Auxiliary. Established 1981.

*Ottawa Women's Canadian Club Scholarship*

Value to be announced. Awarded to an outstanding student who is a Canadian citizen proceeding from one year of program to another of the undergraduate Canadian Studies program. Endowed 1946. Revised 1977, 1983.

*Oxford University Press Award in Law*

A prize of a copy of the *Oxford Companion to Law* awarded annually, on the recommendation of the Department of Law, to a deserving student pursuing the study of law at Carleton. Donor: Oxford University Press. Established 1984.

*The Page and Steele School of Architecture Scholarship*

Value \$300. Awarded annually to an outstanding student enrolled in the School of Architecture at Carleton University. Donor: Page and Steele Architects. Established 1967.

*Dr. C. Stewart Parsons Scholarship in Engineering*

Awarded annually to an entering or continuing student in the Faculty of Engineering. Endowed 1984 by Mrs. C.S. Parsons in memory of her husband, a former Director of the Bureau of Mines.

*Charles and Helen Pattenson Scholarships*

Awarded annually to students entering Carleton University who have demonstrated a high potential for university studies. Mr. Pattenson was engaged in engineering research and development in the Radio and Electrical Engineering Laboratories of the National Research Council, Ottawa, Canada, from 1940 to his retirement in 1976. Donors: The late Charles F. and Helen M. Pattenson. Endowed 1980.

*Lester Bowles Pearson Scholarships*

These scholarships are named in honour of a former Chancellor of Carleton University and are awarded to outstanding students proceeding from one year to another of a full-time undergraduate program at Carleton. Established 1975. Revised 1985.



*Charles Pinhey Award*

Awarded to a student entering the First year of Business at Carleton University from a secondary school in the Regional Municipality of Ottawa-Carleton. The sum of \$300 will be awarded in the student's First year, and \$200 for each succeeding year provided the student is registered as a full-time student at Carleton University and maintains scholarship levels in the Business program. This award is based on high academic performance and on financial need. Donor: The Ottawa-Carleton Board of Trade. Established 1974.

*Planning and Construction Department of Carleton University's Award in the Building Sciences*

Value \$200. Awarded annually to an undergraduate student in Engineering or Architecture to assist with the cost of an energy-related research project. The Dean of Engineering will select the recipient in each year. Preference shall be given to the student whose graduate year project is deemed to have the most merit in furthering the efficient use of energy in the field of building science. Donor: Planning and Construction Department of Carleton University. Endowed 1980.

*National Press Club of Canada Scholarship in Journalism*

A sum equal to tuition fees is awarded annually to a student entering the final year of journalism or news photography course in a Canadian college or university. The name of one Carleton University student will be submitted annually to a selection panel of National Press Club members. Donor: The National Press Club of Canada. Established 1965.

*Prince Memorial Achievement Award*

A book award valued at \$100. Awarded annually to an outstanding graduating Honours student in Economics. The student will be selected on the recommendation of the Award Committee of the Department of Economics. Book(s) will be selected by the department in consultation with the recipient. Endowed 1984 by Professor Kanta Marwah.

*Award of the Government of Quebec for Excellence in the Study of French*

A book award is offered annually by the Minister of Cultural Affairs of the Province of Quebec. Established 1968.

*James H. Rattray Memorial Scholarship*

Value \$500. Awarded annually to a student entering First-year Engineering at Carleton University. Donor: The late James H. Rattray, M.C. Endowed 1961.

*RCA Scholarship*

Value \$200. Awarded annually on the recommendation of the Director of the School of Computer Science to a worthy in-course student enrolled in the School of Computer Science. Donor: RCA Inc. Established 1981.

*Peter Reilly Scholarship*

Value \$750. Awarded annually to a student entering either the Third or Fourth year of a degree program in the School of Journalism who shows talent, aptitude and concern for journalistic disciplines. Preference will be given to a student entering Fourth year who has demonstrated a potential for effective use of the medium of television, current affairs and/or documentary programs. Donors: Friends of the late Peter Reilly. Endowed 1978.

*Roodman Award in Journalism*

Value \$50. Awarded annually for excellence in reporting to a Second- or Third-year student in the School of Journalism. Donors: Mr. and Mrs. Herman S. Roodman. Established 1965. Revised 1980.

*Barbie Ross Memorial Award*

Value \$500. Awarded annually on the recommendation of the Residence University Management and Policy Board to a full-time student in good academic standing who has demonstrated active participation in the affairs of the Carleton University residence community. Donors: Friends and family of the late Barbie Ross. Endowed 1983.

*Annie Fraser Roy Scholarships*

Awarded annually to an in-course student or students enrolled in a program, the majority of whose courses are in literature. Donor: The late Marjorie T. Roy. Endowed 1982.

*James and Jane Fraser Roy Scholarships*

Awarded annually, if merited, to outstanding students proceeding from one year to another in a degree program at Carleton University. Donor: The late Jean Roy. Endowed 1975.

*J. Lansing Rudd Scholarship*

Awarded annually to a superior student progressing from one year of program to another at Carleton University. Donor: The late J. Lansing Rudd. Endowed 1967.

*Department of Russian Undergraduate Award*

Awarded annually on the recommendation of the Department of Russian to an outstanding undergraduate student pursuing a Major or Honours degree in the Department of Russian. Donors: Members and Friends of the Department of Russian. Endowed 1983.

*Jacques and Hélène Sabourin Memorial Scholarship*

Awarded annually, on the recommendation of the Director of the School of Architecture, to the student standing highest in Architecture 77.300 (Lighting for Architecture). Donated by the Illuminating Engineering Society and its members in memory of Jacques and Hélène Sabourin who were active in the field of illumination and who tragically lost their lives in an automobile accident in 1984. Endowed 1985.

*St. Patrick's College Scholarship*

Awarded annually to an entrance or in-course student or students in the humanities and social sciences, with preference being given to students with physical disabilities. Endowed in 1980 to perpetuate the name and traditions of St. Patrick's College.

*Samuel Sair Canadian Jewish History Prize*

Awarded annually, if merited, on the recommendation of the Department of History to a student submitting the best History term paper, research essay or thesis on any aspect of Jewish history in Canada that uses in part the archival holdings of the Public Archives of Canada. Endowed 1985.

*Schlumberger Collegiate Award Scholarship*

Value \$6,000. Two scholarships, valued at \$2,500 each, are awarded annually, on the recommendation of the Dean of Engineering to outstanding students in the Electrical Engineering program. One of the students must be entering Third or Fourth year of the program. The balance of the fund shall be used to support Engineering student activities such as participation in design contests and attendance at conferences. Donor: Schlumberger Foundation. Established 1981.

*Lawrence Segal Memorial Fund*

Value \$20. Established as a book prize for a student enrolled in the School of Business. Donors: The friends of the late Lawrence J. Segal, B.Com. Carleton, 1961. Endowed 1970.



*Richard J. Semple Memorial Award in Mathematics*

Value \$600. Awarded annually to an outstanding student enrolled in an Honours Mathematics program and proceeding to Third or Fourth year of studies at Carleton University. Donors: Friends and family of the late Richard J. Semple. Endowed 1977 in memory of Richard J. Semple, a long-time faculty member of the Department of Mathematics.

*Eric Sigurdson Award*

Value \$650. Awarded annually to an outstanding student in the Computer Systems Engineering program. Donors: Friends and colleagues of the late Professor Eric L. Sigurdson, former member of the Department of Systems and Computer Engineering, in recognition of his contributions to teaching, research and development, and to the establishment of the Computer Systems Engineering program. Endowed 1982.

*Kenneth F. Smith Memorial Award in Journalism*

Awarded annually, on the recommendation of the School of Journalism, to the First-year student standing highest in the Honours Journalism program. Donated by relatives, friends and business associates in honour of the late Kenneth Smith, a Carleton Journalism graduate who became a noted business writer and editor with the Canadian Press. Endowed: 1985

*Hyman Soloway Scholarships*

These scholarships are named in honour of a former Chairman of the Board of Governors of Carleton University and are awarded to outstanding students proceeding from one year to another of a full-time undergraduate program at Carleton. Established 1975. Revised 1985.

*Harry H. Southam Scholarships*

These scholarships are named in honour of a former Chancellor of Carleton University and are awarded to outstanding students proceeding from one year to another of a full-time undergraduate program at Carleton. Established 1975. Revised 1985.

*Mercy Neal Southam Entrance Scholarships*

Entrance scholarships will be awarded annually if merited, to students entering the First year of Arts, Social Sciences, Journalism, Commerce, Science, Engineering, Architecture, Industrial Design or Public Administration at Carleton University. Endowed in 1949. Under the terms of bequest of the late Wilson Mills Southam, the scholarships are in memory of his grandmother, Mercy Neal Southam (1809-1887), "Sturdy pioneer of the Southam Family in Canada."

*Award of the Embassy of Spain*

For excellence in the study of Spanish, a book award is offered annually by the Spanish Embassy in Canada. Established 1960.

*Spectrion Analysis of Trace Elements Inc. Scholarships in Physics*

Value \$300 each. Three scholarships to be awarded annually, when merited, to Canadian citizens proceeding in a full-time Honours Physics program who have displayed originality, innovation and academic excellence in the 300-level Advanced Physics Laboratory. One student shall be selected by the Department of Physics from each of the three physics options: Theoretical, Experimental, and Physics of Modern Technology. Donor: Spectrion Analysis of Trace Elements Inc. Established 1985.

*E.W.R. Steacie Scholarships*

These scholarships are named in honour of a former Chairman of the Board of Governors of Carleton University and are awarded to outstanding students proceeding from one year to another of a full-time undergraduate program at Carleton. Established 1975. Revised 1985.

*Ben and Mary Steinberg Foundation Scholarships*

Awarded to outstanding students who may be in need of financial assistance in the furtherance of their studies. Established 1978.

*Harry Stevinson Scholarship in Aeronautical Engineering*

Value \$1,000. Awarded annually on the recommendation of the Chairman of the Department of Mechanical and Aeronautical Engineering to a student enrolled in aeronautical engineering at Carleton University. Donor: Leigh Instruments Limited. Established 1980.

*Irene Gertrude Stitt Scholarship Fund*

Awarded annually to students of high proficiency proceeding from one year of program to another at Carleton University. The fund has been made possible by a bequest of the late Edith May Stitt, in memory of her sister, Irene G. Stitt. Endowed 1966.

*Carr Suzuki Undergraduate Scholarship*

Value \$1,500. Awarded annually on the recommendation of the School of Journalism to an outstanding student proceeding to the Second or Third year of the Bachelor of Journalism program, and integrating studies in Science with Journalism. Donor: David Suzuki. Established 1985.

*Setsu Suzuki Scholarship*

Value \$1,500. Awarded annually on the recommendation of the School of Journalism to an outstanding student who has completed a degree in Science and is entering the one-year Bachelor of Journalism program. Donor: David Suzuki. Established 1985.

*Awards of the Ambassador of Switzerland to Canada*

For excellence in the study of French, German, and Italian, book awards are offered annually by the Ambassador of Switzerland to Canada. Established 1953.

*Thomson Award for Reporting*

Value \$300. Awarded annually to a student proceeding from Third- to Fourth-year Honours Journalism judged to be outstanding in reporting. Donor: Thomson Newspapers. Established 1970.

*Thorne, Riddell & Company Scholarships*

Two scholarships valued at \$400 and \$300 each. The scholarship of \$400 is awarded annually to the Third-year Business student with the highest average marks. The scholarship of \$300 is awarded to the Third-year Business student with the second-highest average marks. Donor: Thorne, Riddell & Company. Established 1969.

*Henry Marshall Tory Award*

Presented annually to an outstanding graduating student who has shown a high degree of academic application, has indicated an interest in the University by broad participation in extracurricular activities of a constructive nature, has indicated qualities of leadership, and has attended Carleton University for at least three Fall/Winter sessions. Each candidate is nominated by three members of the Students' Association and selection is made by a committee composed of the President of the University, a member of the Faculty chosen by Senate, the Director of Student Awards, and three students chosen by the Students' Council. The winner's name is inscribed on the master trophy and the student receives a miniature replica. The award was established in 1950 by the Students' Council of Carleton College.

*Henry Marshall Tory Scholarships*

These scholarships are named in honour of the first President of Carleton University and are awarded to outstanding students proceeding from one year to another of a full-time undergraduate program at Carleton. Established 1975. Revised 1985.



*Touche, Ross & Company Scholarship*

Two scholarships valued at \$250 each. Awarded to a student who is proceeding from one year to another in the degree program in Business, and who intends upon graduation to study for the qualification of chartered accountant. The award will be made to the student whose character, ability, academic records and other qualities are, in the opinion of the School of Business, those needed by a chartered accountant. Preference will be given to a student with these qualifications who will be entering the final year of program. Applications should be submitted to the Chairman of the School of Business before March 1. Donor: Touche, Ross & Company. Established 1962.

*Undergraduate In-Course Scholarships for Part-Time Students*

Carleton University offers a number of scholarships, tenable at the University, to students continuing in undergraduate studies who have completed the equivalent of at least five credits through part-time study beyond entrance requirements, at the University, and have demonstrated a high potential for university studies. To be eligible the candidate must have maintained a high academic standing and be registered as a part-time student.

*Awards of the Embassy of the Union of Soviet Socialist Republics*

For excellence in the study of Russian, awards are offered annually by the Embassy of the Union of Soviet Socialist Republics. Established 1963.

*University Women's Club of Ottawa Scholarships*

Three scholarships valued at \$470 each. Awarded annually to women students at Carleton University continuing in undergraduate studies who have completed the equivalent of at least five credits beyond entrance requirements at the University and have demonstrated a high potential for university studies. To be eligible the candidate must have maintained a high academic standing and be registered as a part-time student. Donor: University Women's Club of Ottawa. First established in 1952 in honour of Dr. Alice E. Wilson.

*Vered Foundation Scholarships*

Two scholarships valued at \$500 each; one awarded annually, if merited, to an Engineering student in Civil Engineering; the second scholarship awarded annually, if merited, to a student who is proceeding from one year of course to another in a degree program in Political Science. Donor: The Vered Foundation of Ottawa. Established 1975.

*L.N. Wadlin Scholarship in Mathematics*

Value \$550. Awarded annually to a student proceeding from one year to another at Carleton University who has shown excellence in the study of mathematics. Donor: The late Lorenzo N. Wadlin. Endowed 1965.

*Wainwright Scholarships*

Awarded annually to a student or student studying Canadian history. Donor: Miss Dora I.I.S. Wainwright. Endowed 1974. Revised 1980.

*Jessie and Wreford Watson Award in Geography*

Value \$250. Awarded annually to the outstanding student entering the final year of Honours Geography at Carleton University. Dr. Wreford Watson, then Chief Geographer of Canada, founded geography at Carleton in 1949. One year later he was joined by Mrs. Watson and together they lectured in geography at Carleton until 1954. Donors: Friends, faculty and alumni of the Department of Geography. Endowed 1980.

*R.A. Wendt Book Prize*

Value: \$200. Awarded on the recommendation of the Department of Psychology, preference will be given to a student in an undergraduate degree program for work done in the history of psychology. This fund was established on the occasion of Professor Wendt's retirement, in recognition of his contributions over many years to the Department of Psychology, the Faculty of Social Sciences, and to the University community. This prize is intended to assist the recipient to build a personal library.

*James E. Whenham Award*

Value \$200. Awarded annually to a student of superior standing enrolled in the School of Architecture, Carleton University. Donor: James E. Whenham. Established 1968.

*Kingston Whig-Standard Award in Reporting*

Value \$250. Awarded annually to the Journalism student in any reporting course for the story judged the best single assignment turned in. Donor: Kingston Whig-Standard. Established 1970.

*Elizabeth White Memorial Award for Zoological Collection*

Value \$50, together with a book prize. Awarded annually, if merited, on the recommendation of the Department of Biology to a student who has submitted, by November 1, an outstanding collection of insects or arachnids, properly preserved and identified. Donor: Anonymous. Established 1953.

*Wild Leitz Canada Limited Award in Engineering*

A set of stainless steel drawing instruments is awarded annually to a student in First-year Engineering at Carleton University judged most worthy of the award by the Faculty of Engineering. Donor: Wild Leitz Canada Limited. Established 1960.

*Wilgar Memorial Award in English*

A book prize awarded to a Carleton University undergraduate who has shown excellence in essay-writing. Established 1951, in memory of the late W.P. Wilgar, Assistant Professor of English at Carleton University, 1948-50. Endowed 1952.

*Kenneth R. Wilson, Memorial Award for Journalism Graduates*

Value \$900. Offered annually to a student graduating in Journalism who, in the opinion of a board of selection, shows exceptional promise as a future reporter and interpreter of Canadian affairs. Endowed 1953, in memory of Kenneth R. Wilson, Ottawa Editor of *The Financial Post*, by a group of his personal friends.

*Morley E. Wilson Scholarship*

Awarded annually to an outstanding student in Honours Geology who is proceeding from one year of program to another at Carleton University. Donor: The late M.E. Wilson, Sessional Lecturer in Geology at Carleton University, 1947-1953. Endowed 1975.

*Phyllis Wilson Award in Journalism*

Value to be announced. Awarded annually to the top student in Second-year reporting. The recipient is selected by the faculty members of the School of Journalism on the basis of recommendations from the Second-year reporting instructors. Donors: Friends and former students of Professor Phyllis Wilson. Endowed 1982.

*Herbert I. Wolf Award*

Value \$100. Awarded annually to an undergraduate student enrolled in a full-time program at Carleton University. The award is given in memory of Herbert I. Wolf, the son of the donor, who died in active service. Donor: George M. Wolf. Endowed 1981.



*Gordon J. Wood Scholarships in English*

Value \$350 each. One to a full-time student in English proceeding from Second to Third year, who has taken at least three credits in English at Carleton; one to a full-time student in English proceeding from Third to Fourth year, who has taken at least four credits in English at Carleton University. The assessment is made on the basis of overall grades for the year, including Summer courses (if any) from the previous Summer. English marks will be given particular consideration if necessary in the ranking of qualifying students. Donor: Gordon J. Wood, Professor of English, Carleton University. Established 1974.

*Susan Joan Wood Memorial Scholarship*

Value \$850. Awarded annually on the recommendation of the Department of English. Preference will be given to a student proceeding from the Third to Fourth year of an Honours program in English with an emphasis on Canadian literature. Donor: Friends and colleagues of Susan Joan Wood. Endowed 1982.

*Hume Wrong Scholarship*

Established by Mrs. Hume Wrong in memory of her late husband. Awarded annually to the leading student in the Third year of History or Political Science proceeding to his or her final Honours year. Donor: The late Mrs. Hume Wrong. Endowed 1962.

*Nathan and Sara Zelikovitz Award*

Value \$55. Awarded to an outstanding undergraduate student registered in a full-time program at Carleton University. Donor: Nathan Zelikovitz. Endowed 1979.

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**Bursaries**


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*Evelyn Aldridge Bursary in Economics*

Awarded annually to a deserving and needy student or students in any year of Major or Honours studies in the Department of Economics at Carleton University. Endowed in 1980 in honour of Evelyn Aldridge, Department Secretary and Administrator, in recognition of 20 years of devoted service to the University and to the Department of Economics, its faculty and students. Donors: Members and graduates of the Department of Economics and friends of Mrs. Aldridge.

*A. Andras Memorial Bursary*

Awarded annually to an undergraduate student attending Carleton University who is in need of financial assistance and whose parent is a member of a trade union that is affiliated to the Canadian Labor Congress. Endowed 1972, in memory of the late Mr. A. Andras who was a member of Carleton's Board of Governors.

*Atkinson Charitable Foundation Bursary Fund*

Awarded to assist students of Carleton University. Terms of award are as follows: (1) In addition to scholastic merit and financial need, goal and promise will be considered in selecting recipients. (2) Candidates must be residents of Ontario. (3) An applicant must have completed at least one academic year and be enrolled as a full-time undergraduate in any program at Carleton University. (4) For one of the awards, preference will be given to candidates intending later to pursue studies in theology. Donor: The Atkinson Charitable Foundation. Offered for the first time in 1951, as an experiment in the provision of financial aid to students.

*F. Luella Barrigar Bursaries*

Awarded annually to students entering Carleton University or proceeding from one year of program to

another who are in financial need. Some preference shall be given to students with an interest in music. The bursaries are provided through the bequest of the late Miss F. Luella Barrigar, a teacher of music at the Ottawa Teachers' College. Donor: The late F. Luella Barrigar. Endowed 1981.

*Nurse "Bill" Bayley Memorial Fund*

The fund is to provide for assistance in emergencies for students requiring dental and medical care. Endowed in 1974 by friends and students, this award is named in honour of the late Kathleen Bayley, a member of the Counselling and Health Services from 1965 to the time of her death June 7, 1973.

*R.A. Beamish Bursary*

Awarded annually to a student entering or progressing from one year to another who, without financial assistance, could not continue his or her formal education. To be eligible, an applicant must be a resident of one of the 11 eastern counties of Ontario (Renfrew, Frontenac, Lanark, Leeds, Carleton, Grenville, Russell, Dundas, Prescott, Glengarry, Stormont). Donor: The R.A. Beamish Foundation. Endowed 1951.

*Afza Begum Bursary in Physics*

Awarded twice annually (Fall term and Winter term) to a deserving student or students, in any year of Major or Honours studies in the Department of Physics, who is in need of financial assistance. Donor: Dr. Afza Begum. Established 1985.

*Euphemia Bell Bursary Fund*

To provide bursaries to deserving students in financial need. The fund has been made possible by a bequest of the late Euphemia Bell. Endowed 1978.

*Beta Sigma Phi Sorority Bursary*

Value \$800. Awarded to a deserving full-time student or students in good standing requiring financial assistance to complete his or her studies. Preference will be given to a member of Beta Sigma Phi in good standing or the son or daughter of same. Donor: The City Council of Beta Sigma Phi Sorority. Established 1964. Revised 1981, 1985.

*J.P. Bickell Foundation Bursary Fund*

The Trustees of the J.P. Bickell Foundation have established bursaries in the Faculty of Science. An applicant must be taking a normal sequence of courses leading to a degree in Geology and must have competent academic standing. Carleton students may obtain full details of the bursary from the Awards Office. Donor: J.P. Bickell Foundation, Toronto. Established 1956.

*Birks Family Foundation Bursaries*

The Birks Family Foundation has established a plan of annual contributions to the student aid fund of recognized Canadian universities and colleges for the creation of the Birks Family Foundation Bursaries. The bursaries are awarded by the foundation on the recommendation of the University Scholarship Committee and are not restricted to faculty or year and may be renewed. The number and amount of such awards may vary annually, depending upon the funds available for the purpose from the Foundation.

*Gretta Boyd Memorial Bursary*

Value \$150. First awarded in 1969-70 to an undergraduate student in any year or faculty with good academic standing and in need of financial assistance. Donor: Kiwanis Club of Nepean. Established 1969 in memory of the late Gretta Boyd. Revised 1985.



*Nathan Braham Bursary*

Awarded annually to an entering or returning student with superior academic standing who is in need of financial assistance. The bursary has been made possible by a bequest of Mr. Nathan Braham. Endowed 1964.

*Donald William Buchanan Bursary*

Awarded annually to a student entering or progressing from one year to another and who is in need of and deserving of assistance to continue studies as a full-time student. Donor: The late Donald William Buchanan. Endowed 1967.

*The Canadian Club of Ottawa Bursary*

Value \$500. Awarded annually to student(s) in need of financial assistance. The object of the Canadian Club is to foster interest in and knowledge of Canada and Canadian affairs. Donor: The Canadian Club of Ottawa. Established 1981. Revised 1985.

*Carleton University Academic Staff Association Bursaries*

Four bursaries valued at \$300 each. Awarded annually to full-time students proceeding from one year of program to another and requiring financial assistance. Donor: Carleton University Academic Staff Association. Established 1977.

*Carleton University Department of Security Services Bursary*

To be awarded annually to a deserving student who has officially declared a concentration in Criminology and Criminal Justice and who is in need of financial assistance. Donor: Carleton University Department of Security Services. Established 1983.

*Carleton University Faculty Wives Association Bursary*

Value \$250. Awarded to a student in good academic standing and in financial need, who is proceeding from First to Second year of studies at Carleton University. Donor: Carleton University Faculty Wives Association. Established 1977.

*Carleton University Refugee Student Bursary*

Value \$2,500. Awarded annually on the recommendation of the World University Service of Canada to a refugee student entering or continuing his or her program at Carleton University, who is in need of financial assistance.

*Desmond Geoffrey Carty Bursary*

Awarded annually to a student in course, specifically in Engineering, who would not otherwise be able to proceed without delay to a higher year within the University. Donor: Mrs. E.G. Carty, in memory of her son, Desmond Geoffrey Carty. Endowed 1983.

*Edward Godfrey Carty Bursary*

Awarded annually to a student in course, specifically in Engineering, who would not otherwise be able to proceed without delay to a higher year within the University. Donor: Mrs. E.G. Carty, in memory of her husband, Edward Godfrey Carty. Endowed 1964.

*Maurice Frederick Carty Bursary*

Awarded annually to a student in course who would not otherwise be able to proceed without delay to a higher year within the University. Donor: Mrs. E.G. Carty, in memory of her son, Maurice Frederick Carty. Endowed 1957.

*The Fred Cinkant Bursaries in Engineering*

Awarded annually to Canadian citizen students entering or proceeding from one year of program to another in the Faculty of Engineering, who are in need and deserving of financial assistance to continue their studies at Carleton. Donor: Fred Cinkant, in memory of his mother and father, Mr. and Mrs. Antal Cinkant. Endowed 1984.

*The Lorraine Cinkant Bursaries in Science*

Awarded annually to Canadian citizen students entering or proceeding from one year of program to another in the Faculty of Science, who are in need and deserving of financial assistance to continue their studies at Carleton. Donor: Lorraine Cinkant, in memory of her mother and father, Mr. and Mrs. Edmond Sabourin. Endowed 1984.

*Corporation House Limited Bursary*

To be awarded annually to a good student in need of financial assistance who is, in addition, a son or daughter of a parent employed in the public service of Canada, or in a federal corporation or agency, or serving in the Armed Forces of Canada. Donor: Corporation House Limited. Established 1962.

*Engineers' Wives Association Bursary*

Value \$1,500. Awarded annually to deserving students enrolled in the Faculty of Engineering. Donor: Engineers' Wives Association of Ottawa. Established 1959.

*Lillian Fallis Bursary*

Value \$500. Awarded annually to a deserving student(s) proceeding from one year of program to another in the School of Business at Carleton University and who is in need of financial assistance. Donors: The family of the late Duncan H. Maclaren, a graduate of the School of Business. Endowed in 1980 in honour of Mrs. Lil Fallis, a longtime member of staff in the school, in recognition of her special interest in and support of students.

*C.A. Fitzsimmons and Company Limited Bursary*

Value \$150. Awarded annually to a competent student entering Carleton University who, without financial assistance, could not continue his or her formal education. Donor: C.A. Fitzsimmons and Company Limited, Ottawa. Established 1960.

*Friends of Carleton Bursary Fund*

A sum to provide bursaries for deserving students in need of financial assistance. This fund has been made possible by contributions from the Friends of Carleton University. Established 1967.

*Mary C. Grant Bursary (Laurentian Chapter, I.O.D.E.)*

Value \$1,125. Awarded annually to not more than three students who require financial assistance. The bursary was endowed in honour of Mary C. Grant. Donor: The Laurentian Chapter, I.O.D.E. Established 1962. Revised 1980.

*Knights of Pythias, Aurora Lodge No. 53 Bursary*

Value \$100. Awarded to a good student progressing from one year of program to another who needs financial assistance to continue his or her studies. Donor: Knights of Pythias, Aurora Lodge No. 53. Established 1960.

*Patricia Larmonth Memorial Bursary*

Value \$300. Awarded on the basis of reasonable competence, need and personal qualifications to a Canadian citizen who is a full-time student. Donor: Ottawa Women's Canadian Club. Established 1971. Revised 1983.

*Litton Systems (Canada) Limited Bursaries*

Two bursaries valued at \$250 each. Awarded annually to students with good academic standing, enrolled in the Faculty of Engineering, and who are in need of financial assistance. Preference will be given to those students who plan to major in Electrical or Mechanical Engineering. Donor: Litton Systems (Canada) Limited. Established 1967.

*Jean A. Loates Bursary*

Awarded annually to a deserving student entering Carleton University or proceeding from one year of program to another and requiring financial assistance to complete



his or her studies. Donated by friends and colleagues of Jean Loates to mark her retirement in 1977. Mrs. Loates is a Carleton graduate and had a 26-year career at the University, first as Student Personnel Officer and from 1966 as Awards Officer. Endowed 1977.

**Gordon Marshall and Jean Trudeau-Marshall Bursary**  
Value \$300. Awarded annually to a deserving student from the Regional Municipality of Ottawa-Carleton, who is enrolled at Carleton University and in need of financial assistance in order to continue his or her studies. Donor: Mr. Kenneth D. Simmons, in honour of his close friends, Gordon and Jean Marshall. Established 1985.

**Ontario Industrial Roofing Contractors Association Bursary**  
Value \$500. Awarded annually to a student or students enrolled in Architecture, of good academic standing, who require(s) financial assistance. Donor: Ontario Industrial Roofing Contractors Association. Established 1980.

**Ottawa Citizens' War Services Committee Bursary**  
An annual sum of approximately \$300 is available to assist veterans, their dependents or descendants, who are students in good standing at Carleton University and are in need of financial assistance. Endowed 1948.

**Ottawa Superfluity Shop Bursaries**  
An annual sum of approximately \$1,500 is available to provide bursaries for veterans of World War I or World War II, or for the descendants of such veterans, who are students in good standing at Carleton University and in need of financial assistance. Endowed 1947.

**Petro-Canada Bursaries**  
Value \$1,000. Awarded annually to deserving undergraduate or graduate students studying or doing research in areas related to Petro-Canada's activities (business, economics, geology, chemistry, physics and engineering) and who are in need of financial assistance. Donor: Petro-Canada. Established 1975. Revised 1980, 1983.

**Phillips Bursary**  
The annual yield of a fund of \$5,000 made available to Carleton University by Miss L.A. Phillips. The bursary is to be awarded each year to a student with good academic standing who is in need of financial assistance. Endowed 1962.

**James H. Rattray Bursary Fund**  
To provide bursaries for students in Science and Engineering, with certain areas of preference. Donor: The late James H. Rattray, M.C. Endowed 1961.

**Royal Canadian Legion Branch 16 Bursary**  
Value \$500. Awarded annually to a deserving student (or students) from the Regional Municipality of Ottawa-Carleton enrolled at Carleton University and who is in need of financial assistance. Donor: Royal Canadian Legion, Branch 16, Billings Bridge. Established 1983.

**J. Lansing Rudd Bursary**  
Awarded annually to a good student progressing from one year of program to another who needs financial assistance to continue his or her studies. Donor: The late J. Lansing Rudd. Endowed 1967.

**Abraham and Mary Shaffer Bursary**  
Awarded annually to a good student entering Carleton University or proceeding from one year of program to another and requiring financial assistance to complete his or her studies. Donor: The late Abraham Shaffer. Endowed 1967.

**William Ernest Simmons Bursary**  
Value \$300. To be awarded annually to a deserving student who has officially declared a concentration in Criminology and Criminal Justice and who is in need of financial assistance. Donor: Mr. Kenneth D. Simmons. Established 1983 in memory of the late William Ernest Simmons.

**H.A. Simons (International) Ltd. Emergency Fund**  
Value \$250. A fund to provide emergency bursary assistance to students in need of financial aid. Donor: H.A. Simons (International) Ltd. Established 1978.

**Z. Matthew Stankiewicz Bursary**  
Awarded annually to a deserving student requiring financial assistance, who is entering or is enrolled in the School of Architecture at Carleton University. Donors: Friends, relatives and associates of the late Z. Matthew Stankiewicz. Endowed 1980.

**Ormond M. Stitt Bursary Fund**  
To provide bursaries for deserving students in need of financial assistance. The fund has been made possible by a bequest of the late Miss Edith May Stitt, in memory of her brother, Ormond M. Stitt. Endowed 1966.

**Isabella Ellen Taylor Memorial Bursary Fund**  
To provide bursaries to undergraduates in any year of program who are in need of financial assistance and have good academic standing. Donor: The late Daisy Elizabeth Taylor. Endowed 1969.

**C.R. Thompson Bursary**  
Value to be announced. Awarded annually to a deserving student proceeding from one year of program to another in the Faculty of Engineering who is in need of financial assistance. Endowed in 1980 in honour of C.R. Thompson, Associate Dean of Engineering in recognition of his contributions to the Faculty of Engineering and its students.

**3M Canada Inc. Bursary**  
Value \$500. Awarded annually to a good student or students in Commerce or Science, who requires financial aid. Donor: 3M Canada Inc. Established 1981.

**University General Bursary Fund**  
The fund is to provide bursaries in aid of students with satisfactory academic standing who, in the First or subsequent program years, are in need of financial assistance. Established by the University in 1954.

**Wainwright Bursary**  
Awarded annually to a student or students studying Canadian history. Donor: Miss Dora I.I.S. Wainwright. Endowed 1974. Revised 1980.

**Honourable Cairine Wilson Bursary**  
Awarded annually to a good student entering Carleton University or proceeding from one year of program to another and requiring financial assistance to complete his or her studies. The bursary has been made possible by a bequest of The Honourable Cairine Wilson, first woman member of the Canadian Senate. Endowed 1962.

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## Publication Grant

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**The John Porter Publication Grant**  
This grant, established in 1979 by friends and colleagues of the late John Porter, is open to authors of book-length works. The authors must be members of the Carleton University community whose manuscripts have been accepted by a reputable publisher, or persons not affiliated with Carleton University whose manuscripts

have been accepted for publication in the Carleton Library series. An annual award of \$1,000, to be applied against the costs of publication of the work, will be determined by a Grants Committee appointed by the Vice President (Academic). Applications or nominations having been received by the committee, the recipient will be selected by the committee on the basis of overall merit and contribution to the literature dealing in aspects of Canadian society. The committee may decline to make an award in a given year for lack of meritorious candidates. The recipient will be expected to deliver a University public lecture dealing in the topic of the book at or near the time of publication.

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### Loan Funds

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#### *John Parker Loan Fund*

To provide loans not exceeding \$1,000 each to students who have completed at least one successful year at Carleton University and who are not eligible to receive assistance from other sources of financial aid. This fund also provides emergency loans for 60 days or less to students whose funds from other sources have been delayed. Application forms are available to students in the Awards Office.

#### *Government Aid programs:*

See Student Services p. 19.

*Further information regarding existing sources of scholarships, awards, bursaries and loans may be had from the Awards Office, telephone 564-3735.*



## Chancellor

The Hon. Gordon Robertson, P.C., C.C., B.A., M.A., D.C.L., LL.D., D. de l'Univ., F.R.S.C.

## President and Vice-Chancellor

William E. Beckel, B.A., M.Sc., Ph.D.

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### Vice-Chairman

Russell Cruikshank, B.A.Sc., P.Eng.

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The Chancellor

The President and Vice-Chancellor

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Samuel Hughes, Esq.  
Judith Oyen, Q.C., B.A., LL.B.  
Sasa Petricic, Esq.  
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Guy Roberge, Q.C., B.A., LL.L., D.C.L., D. de l'Univ.  
Richard Salmon, Esq.  
David Scott, Q.C., B.A., LL.B.  
Jean Teron, B.A.

#### Retire 1987

Anne Bouey  
Claude Edwards, Esq.  
Naomi Griffiths, B.A., M.A., Ph.D.  
Margaret Labarge, C.M., B.A., B.Litt., D.Litt.  
Joy Maclaren, B.Sc.  
Denise Moncion, B.A., M.S.W.  
James Neelin, B.A., Ph.D.  
John Roth, B.Eng., M.Eng.  
Frank Warnock, Esq.  
Jack Warren, O.C., B.A., LL.D.

#### Retire 1988

Russell Cruikshank, B.A.Sc., P.Eng.  
A.J. Freiman, Esq.  
Frederick Gibson, Q.C., B.Com., LL.B.  
Gordon Gow, Esq.  
Pamela McDougall, B.Sc.  
William McMillan, Esq.  
John Richard, Q.C., B.A., LL.B.  
Donald Yeomans, B.A.Sc., P.Eng., R.I.A., F.S.M.A.C.

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Donald McEown, B.A., Dip.Bus.Admin.

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Professor Frantisek Fiala, RNDr., C.Sc.  
Dean Dennis P. Forcece, M.A., Ph.D.  
Associate Professor J.R. Giard, Diploma-Design, Higher Diploma In Industrial Design  
Dean N.E.S. Griffiths, B.A., M.A., Ph.D.  
Mr. Martin Lefebvre  
Mr. Tony Macerollo  
Dean J.M. Neelin, B.A., Ph.D.  
Associate Professor Alberto Perez-Gomez, Dip.Eng.Arch., M.A., Ph.D.  
Dean J.S. Riordon, M.Eng., D.I.C., Ph.D., P.Eng.  
Chancellor Gordon Robertson, P.C., C.C., B.A., M.A., D.C.L., LL.D., D. de l'Univ., F.R.S.C.  
Professor T.J. Ryan, M.A., Ph.D.  
Mr. C.G. Watt, B.A.  
Dean S.F. Wise, B.A., B.L.S., M.A.

### Board Appointees

To be appointed.

### Elected Members

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Associate Professor J.A. Brook, B.A., M.A., D.Phil.  
Professor L.A. Copley, B.Sc., M.Sc., Ph.D.  
Ms Joanna Everitt  
Professor D.R. Gardner, B.Sc., Ph.D.  
Associate Professor Michel Gaulin, B.A., M.A., Ph.D.  
(Clerk of Senate)  
Professor Willem Gilles  
Mr. Roger Gingrich  
Associate Professor G.F. Goodwin, B.A., Ph.D.  
Associate Professor C.C. Gordon, B.A., Ph.D.  
Professor J.E. Graham, B.Sc., M.A., M.S., Ph.D.  
Ms Tina Groves  
Professor Peter Harcourt, B.A., M.A.  
Mr. Bill Harrison  
Mr. Warren Huska  
Associate Professor R.B. Lovejoy, A.B., M.A., Ph.D.  
Associate Professor C.A. Marsden, M.A., Ph.D.  
Associate Professor A.M. Maslove, B.A., Ph.D.  
Professor R.D. Mathews, B.A., M.A.  
Associate Professor George McKnight, B.A., M.A., Ph.D.  
Professor J.T. O'Manique, B.Sc., B.Ph., Ph.L., Ph.D., D.Ph.  
Associate Professor I.V.W. Pringle, M.A.  
Ms Johanna Provost  
Associate Professor B.M. Puttaswamaiah, M.Sc., M.A., Ph.D.  
Professor T.K. Rymes, B.A., M.A., Ph.D.  
Professor H.I.H. Saravanamuttoo, B.Sc., Ph.D., F.C.A.S.I., F.I.Mech.E., P.Eng.  
Associate Professor C.N. Sargent, LL.B., LL.M.  
Associate Professor R.A. Shigeishi, B.Sc., Ph.D.  
Professor J.H. Sigler, A.B., M.A., Ph.D.  
Associate Professor J. Sinclair, B.Sc., Dip. in Biophysics, Ph.D.  
Associate Professor D.A. Smith, B.Com., M.A., Ph.D.  
Associate Professor A.D. Steeves, M.S.A., Ph.D.  
Assistant Professor C.L. Tan, B.Sc., Ph.D.  
Associate Professor D.A. Thomas, B.Eng., M.Eng.  
Professor J.K. Torrance, B.S.A., M.S. Ph.D.  
Lecturer Gillian Walker, B.A., M.S.W.  
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Ms Inger Weibust

Associate Professor M.E. Welsh, B.A., Ph.D.  
 Associate Professor Donald Westwood, Dip. Arch., R.I.B.A.  
 Associate Professor Julian Wolfe, B.A.  
 Associate Professor E.N. Zimmerman, B.A., M.A., Ph.D.

### Special Appointments

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 Mrs. C.E. Dence, B.A., M.A.  
 Professor Donald Fraser, LL.B., LL.M.  
 Assistant Professor T.P. Wilkinson, B.Sc., Ph.D.

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*Acting Director of Student Awards*

Carol Fleck

*Director of University Counselling Services*

Vincent Giannandrea, B.A., M.A. (Western Ontario)

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Ene M. Tikovt, B.A., M.L.S. (McGill)

Audrey Turner, B.A. (Carleton)

Verna Z. Wilmeth, B.A. (San Jose) M.A.L.S. (Michigan)

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*Professor of Journalism*

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*Professor of Engineering*

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*Associate Professor of Political Science*

C. Michael Allen, B.Sc., (Queen's) M.Sc. (Illinois)

*Visiting Assistant Professor of Engineering*

C.H. Amberg, M.A. (Queen's) Ph.D. (Toronto) F.C.I.C.

*Professor of Chemistry*

Duncan M. Anderson, B.S.A. (O.A.C. Toronto) M.Sc. (Western Ontario)

*Associate Professor of Geography*

K.S. Andonian, M.Arch. (Yerevan Polytechnic) M.A.Sc., Ph.D. (Waterloo)

*Associate Professor of Architecture*

Donald A. Andrews, B.A., M.A. (Carleton) Ph.D. (Queen's)

*Professor of Psychology*

Florence K. Andrews, B.A. (Douglass College) M.A., Ph.D. (Rutgers)

*Associate Professor of Sociology*

Douglas G. Anglin, B.A. (Toronto) M.A., D.Phil. (Oxford)

*Professor of Political Science*

Hymie Anisman, B.A. (Sir George Williams) M.A. (Memorial) Ph.D. (Waterloo)

*Professor of Psychology*

J.W. ApSimon, B.Sc., Ph.D. (Liverpool)

*Professor of Chemistry*

J.C. Armitage, B.Sc. (London) Ph.D. (Manchester)

*Associate Professor of Physics*

F. Atienza, B.T. (Salamanca) Lic.T. (Innsbruck) Lic.J.C. (Rome) D.J.C., D.S.T. (Ottawa)  
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*Adjunct Professor of French*

D.L. Tate, B.A. (Carleton) M.A. (Western Ontario) Ph.D. (Carleton)  
*Adjunct Professor of Psychology*

G.D. Taylor, B.A., M.A. (British Columbia)  
*Adjunct Professor of Geography*

Ron Thibault  
*Sessional Lecturer in Journalism*

D.Y. Thomas, B.Sc. (Bristol) M.Sc., Ph.D. (London)  
*Adjunct Professor of Biology*

E. Thomas, B.A. (Carleton) LL.B. (Ottawa) M.A. (Carleton) of the Bar of Ontario  
*Sessional Lecturer in Law*

R.E. Thomas, B.Sc. (New Brunswick) D.I.C. (Imperial) Ph.D. (London) P.Eng.  
*Adjunct Professor of Engineering*

Robert E. Tourangeau, B.A. (Toronto) B.Eng. (Carleton) LL.B. (Ottawa) of the Bar of Ontario  
*Sessional Lecturer in Law*

R. Trites, B.A. (Gonzaga) M.A., Ph.D. (Ottawa)  
*Adjunct Professor of Psychology*

G. Trottier  
*Sessional Lecturer in Architecture*

W. Tyson, B.A.Sc. (Toronto) Ph.D. (Cambridge)  
*Sessional Lecturer in Engineering*

Geoffrey Voyce  
*Sessional Lecturer in Industrial Design*

F.R. Wake, B.A., Ph.D. (McGill)  
*Adjunct Professor of Psychology*

W. Wallace, Ph.D. (Manchester)  
*Adjunct Professor of Engineering*

R. Warnock, B.S.C.E. (Illinois) M.S., Ph.D. (Iowa)  
*Sessional Lecturer in Engineering*

C.G. Watt, B.A. (Carleton)  
*Sessional Lecturer in Business*

D.W. Webster, B.Sc. (Ottawa)  
*Sessional Lecturer in Engineering*

N. Weeks, B.Sc. (Brock) B.Ed. (Toronto) LL.B. (Osgoode Hall) M.E.S. (York)  
*Sessional Lecturer in Law*

L. Weinstein, B.A. (Carleton) LL.B. (Osgoode Hall) of the Bar of Ontario  
*Sessional Lecturer in Law*

V. Westwick, B.A. (St. Patrick's) LL.B. (Queen's) of the Bar of Ontario  
*Sessional Lecturer in Law*

T.E. Whalen, B.A. (California) M.A. (British Columbia) Ph.D. (Dalhousie)  
*Adjunct Professor of Psychology*

M.B. Wilk, Ph.D. (Iowa State)  
*Adjunct Professor of Statistics*



Judy L. Wilson, B.A., LL.B., M.P.A. (Queen's)  
*Sessional Lecturer in Law*

D.M. Wood, B.A., M.A. (Toronto) Ph.D. (McMaster)  
*Adjunct Professor of Biology*

Gurli A. Woods, Ph.D. (British Columbia)  
*Sessional Lecturer in Comparative Literature*

A. Woodsworth, B.Sc. (British Columbia) M.Sc., Ph.D.  
(Queen's)  
*Sessional Lecturer in Physics*

J.S. Wormith, B.A. (Brown) M.A. (Carleton) Ph.D. (Ottawa)  
*Adjunct Professor of Psychology*

Boguslaw Wozniak, M.F.A. (Academy of Fine Arts,  
Warsaw)  
*Associate Professor of Industrial Design*

E.W. Wright, B.A.Sc. (Toronto) M.Sc., Ph.D. (Illinois)  
*Adjunct Professor of Engineering*

# Carleton Through the Years

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## The Institution

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**1942**

Ottawa Association for the Advancement of Learning established to develop Carleton College. At first the College offered only evening classes in introductory university subjects, with some courses in public administration.

**1943**

Ottawa Association for the Advancement of Learning Incorporated.

**1945**

Beginning of day classes and full-time teaching. Establishment of the Faculty of Arts and Science, including courses in journalism, and First-year engineering.

**1946**

Move from rented premises to the First Avenue campus, formerly Ottawa Ladies' College. First degrees awarded, three in journalism and three in public administration.

**1947**

The College committed itself to complete Major and Honours courses, the Third year of the program being offered for the first time in 1947-48, the Fourth year in 1948-49, and the Fifth (Honours) year in 1949-50.

**1949**

First degrees in arts, science and commerce awarded. Formation of Senate.

**1950**

First Honours degrees in arts and science awarded.

**1952**

The Carleton College Act 1952 passed by the Ontario Legislature. This changed the corporate name to Carleton College. It also confirmed the power to grant degrees.

**1952-53**

Property for new campus acquired, on the site between the Rideau River and the Rideau Canal.

**1953**

Establishment of the School of Public Administration.

**1954**

Appointment of Architectural Associates for Carleton to prepare first master plan and to design first group of buildings. First honorary degree of LL.D. conferred on Dag Hammarskjöld, Secretary-General of the United Nations.

**1955**

First Master's degree awarded.

**1957**

The Carleton University Act, 1957. Establishment of the School of Engineering. Establishment of the Institute of Canadian Studies.

**1959**

Move to Rideau River campus, following construction of the Henry Marshall Tory Building (Science), the Maxwell MacOdrum Library, and Norman Paterson Hall (Arts).

**1961**

First degrees in engineering awarded. First Ph.D. degree awarded.

**1962**

Students accommodated in residences on campus for the first time.

**1963**

Reorganization into Faculties of Arts, Engineering, Science, and Graduate Studies. Committee on Soviet and East European Studies established.

**1966**

Establishment of the School of International Affairs. Establishment of the School of Commerce. Comparative Literature Committee established.

**1967**

Integration of St. Patrick's College as a division of the Faculty of Arts. School of Social Work became part of the Faculty of Arts.

**1968**

Establishment of the School of Architecture. New University Government established with student representatives at all levels of the University system from department to Board of Governors. First year of the academic exchange agreement between Carleton and the University of Leningrad.

**1969**

Free choice First year initiated for the Faculty of Arts. Linguistics Committee established.

**1970**

Agreement completed between Carleton and University of Ottawa to accept "visiting students" at the graduate level. Biochemistry degree program initiated.

**1971**

Unified Liberal Arts Program established for St. Patrick's College. General Science Degree program established with Environmental Studies program available.

**1972**

School of Social Work is accommodated on the Rideau River campus. A one-year French program offered at St. Patrick's College for students wishing to improve their knowledge of the French language and culture by one year's intensive study. Exchange program with the University of Chambéry, France.

**1973**

First degrees in architecture awarded. St. Patrick's College moved to a new facility on the Rideau River campus. Establishment of the School of Industrial Design. New athletics complex, with a fifty-metre pool and a fitness centre opened.



**1974**

Faculty of Graduate Studies renamed Faculty of Graduate Studies and Research. School of International Affairs renamed The Norman Paterson School of International Affairs. First courses offered off campus in Lanark County and downtown Ottawa. St. Patrick's College division held first Convocation ceremony at new location on Rideau River campus. Master of Journalism program approved for September 1974. Master of Arts program in anthropology approved for September 1975. Master of Arts program in religion approved. Program leading to Certificate in Teaching of English as a Second Language established. Academic exchange between Carleton and the Institute of Cultural Relations, Budapest, Hungary, September 1974.

**1975**

Lester B. Pearson Chair for International Affairs approved. Establishment of Gerhard Herzberg Lecture Series in Science. First students enrol in joint Master of Public Administration program, offered in conjunction with the University of Ottawa. Scholarships established for part-time students. CKCU-Radio Carleton has FM licence approved. New undergraduate programs introduced in Canadian studies and computing science. A program in film studies approved. First Dunton Alumni Award presented.

**1976**

Creation of The Paterson Centre. Division of the Faculty of Arts into two separate faculties: the Faculty of Arts and the Faculty of Social Sciences. First Master of Journalism degrees awarded.

**1977**

Criminology and Corrections concentration (later renamed Criminology and Criminal Justice) begun at St. Patrick's College, April. Exchange programs with two Nigerian universities: Ahmadu Bello University in Zaria and University of Ife in Ile-Ife.

**1978**

School of Continuing Education established. Credit courses offered on cable television, September. Institute of Biochemistry established.

**1979**

St. Patrick's College ceased to operate as an academic unit of the University. Academic programs of the College continue as University programs, except for the Unified Liberal Arts Program. Department of Film Studies established.

First Marston LaFrance Memorial Lecture presented; Ph.D. program in English and French Canadian literature begun.

**1980**

Undergraduate School of Computer Science established.

**1981**

Establishment of the Ottawa-Carleton Institute for Research and Graduate Studies in Chemistry, a joint program with the University of Ottawa. Establishment of a joint Ph.D. program in economics with the University of Ottawa.

**1982**

Establishment of the Ottawa-Carleton Centre for Geoscience Studies, representing the combined research strengths of Carleton University and the University of Ottawa with programs leading to M.Sc. and Ph.D. degrees in most areas of geology. Establishment of a joint Master's program in computer science with the University of Ottawa. University celebrates 40th anniversary.

**1983**

Establishment of four joint graduate programs with the University of Ottawa: the Ottawa-Carleton Centre for Graduate Studies and Research in Biology; the Ottawa-Carleton Centre for Graduate Studies and Research in Physics; the Ottawa-Carleton Institute for Research and Graduate Studies in Electrical Engineering; and the Ottawa-Carleton Graduate Specialization in Neuroscience.

**1984**

Two new undergraduate programs were introduced: the Combined Honours B.Sc. in Biology and Biotechnology, and in Biochemistry and Biotechnology. Joint graduate programs with the University of Ottawa were established in the areas of civil engineering, mechanical and aeronautical engineering, and mathematics and statistics.

**1985**

Master of Management Studies program established in the School of Business. The School of Public Administration offers a concentration in development administration in conjunction with the Norman Paterson School of International Affairs. An additional floor on one wing of the Herzberg Laboratories for Physics is constructed to house the School of Computer Science.

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**Enrolment**


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In the fall of 1985, there were 11,160 full-time students registered at the University; students taking courses on a part-time basis numbered 5,400.

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**Presidents**


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**1942-47**

Henry Marshall Tory

**1947-55**

Murdoch Maxwell MacOdrum

**1955-56**

James Alexander Gibson (*Acting*)

**1956-58**

Claude Thomas Bissell

**1958-72**

Arnold Davidson Dunton

**1972-78**

Michael Oliver

**1979**

James Downey (*Pro tempore*)  
January 1—May 15

**1979-**

William Beckel

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**Chancellors**

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**1952-54**

Harry Stevenson Southam

**1954-68**

Chalmers Jack Mackenzie

**1969-73**

Lester Bowles Pearson

**1973-80**

Gerhard Herzberg

**1980-**

Gordon Robertson



The University sponsors a number of special lectures each year. These lectures are open to the public.

## **A.D. Dunton Alumni Award Lecture**

This lecture series was established in 1974 in honour of Arnold Davidson Dunton, former President of Carleton University and former Director of the Institute of Canadian Studies. The lecture is presented by a Carleton alumnus who has made outstanding achievements in his or her field.

## **The Davidson Dunton Research Lecture**

Established in 1983, the Davidson Dunton Research Lecture is presented by a Carleton University scholar who is active in research and has achieved international recognition. The lecture is in honour of former Carleton University President Arnold Davidson Dunton.

## **The Walter L. Gordon Lecture**

This lecture is sponsored by Carleton's Institute of Canadian Studies and the Canadian Studies Foundation in honour of Walter L. Gordon, former President of the Privy Council. The series was established in 1980.

## **The Gerhard Herzberg Lecture**

Established in 1975 by the Faculty of Science, this lecture honours Gerhard Herzberg, former Chancellor of Carleton University and recipient of the 1971 Nobel Prize for Chemistry. The purpose of the lecture is to emphasize the relationship between science and society and to address an aspect of science that has a pronounced impact on our daily lives.

## **The Marston LaFrance Research Fellowship Lecture**

The fellowship was established in 1979 by the Faculty of Arts in memory of Marston LaFrance, former Professor of English and Dean of Arts at Carleton University. Each year, the recipient presents a seminar or public lecture on some aspect of the research conducted while on fellowship.

## **The C.J. Mackenzie Lecture**

This annual lecture series was established in 1986 in memory of C.J. Mackenzie, former President of the National Research Council and the Atomic Energy Control Board, and Chancellor of Carleton University from 1954 to 1968. The lecture is sponsored by the Faculty of Engineering.

## **The McMartin Memorial Lecture**

The McMartin Memorial Lecture is presented in alternate years by the Department of Religion at Carleton University and the Faculty of Graduate Studies at the University of Ottawa. The series was established in 1969 and is funded by Mrs. J.P. Gilhooly of Ottawa in memory of her parents, Mr. and Mrs. John McMartin. The lectures involve themes that promote the importance of ethical, moral and religious standards to education and living.

## **The Adam Mickiewicz Memorial Lecture**

Established in 1969, the Adam Mickiewicz Memorial Lecture is presented each year by noted authorities in the area of Soviet and East European Studies. The series is sponsored by Carleton University's Institute of Soviet and East European Studies and the Adam Mickiewicz Foundation of Canada to commemorate Poland's foremost poet, Adam Mickiewicz.

## **The Lester B. Pearson Chair of International Affairs Lecture**

Established in 1976, the chair is named in honour of Lester B. Pearson, former Chancellor of Carleton University and Prime Minister of Canada. The lecture is presented by the incumbent of the Lester B. Pearson Chair of International Affairs.

## **The Pickering Lecture**

The Pickering Lecture is sponsored by the Department of Psychology at Carleton University and the Pickering Institute for Living in Ottawa. This annual lecture focuses on problems of developmental and childhood psychology.

## **The Alan B. Plaunt Memorial Lecture**

The lecture was established in 1957 through a gift from an anonymous donor in memory of Alan B. Plaunt, a distinguished Canadian who was active in many projects of national and civic importance in the 1930s. Each year, a Canadian who is involved in contemporary issues and committed to a distinctively Canadian quality of life is given the opportunity to speak out on any aspect of Canadian life.

## **The John Porter Memorial Lecture**

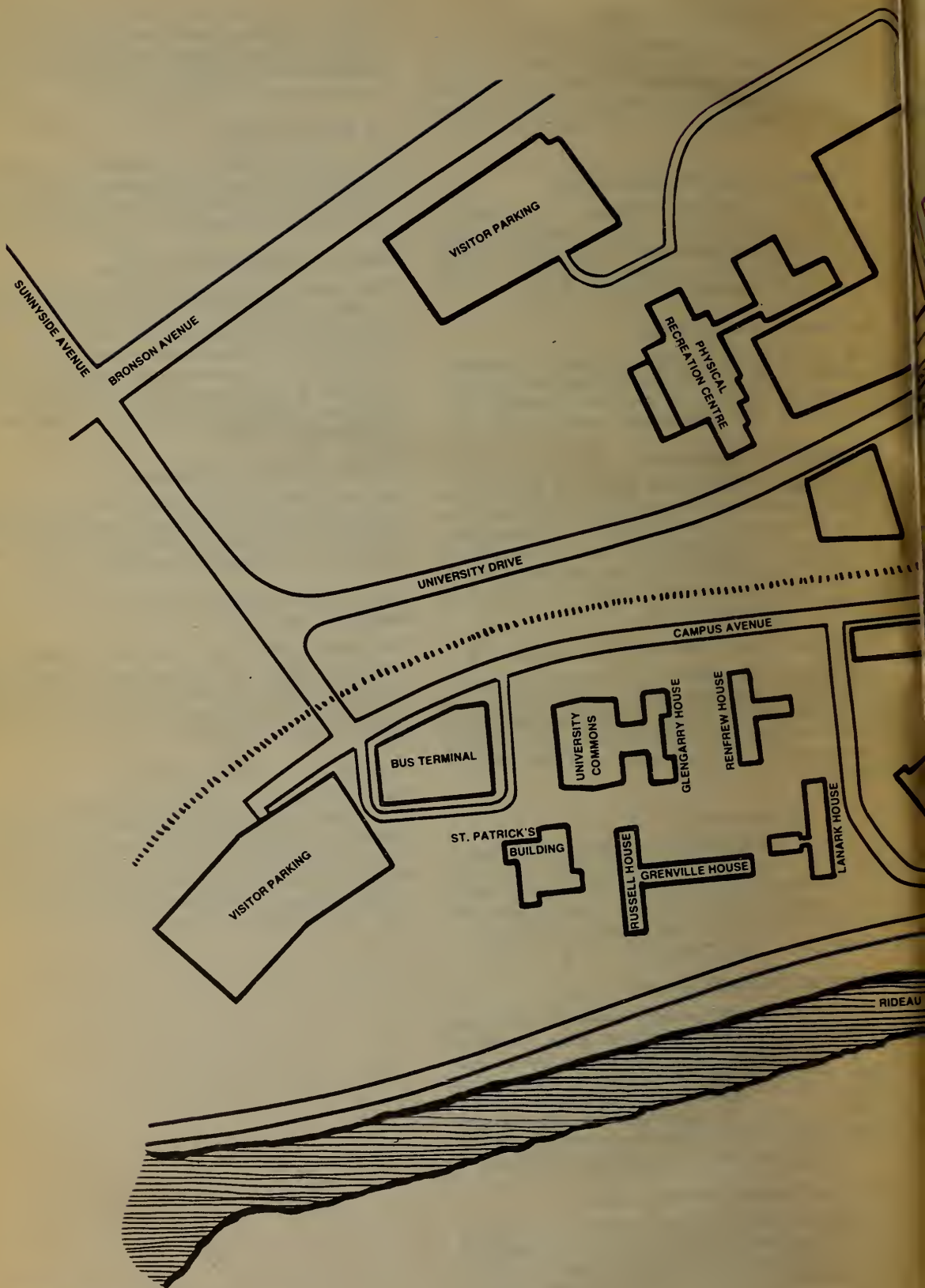
This annual lecture is sponsored by the Faculty of Social Sciences in memory of John Porter, former Vice-President (Academic) at Carleton University and a distinguished sociologist. The series was established in 1982.

## **The Technology, Society, Environment Committee/Faculty of Arts Lecture**

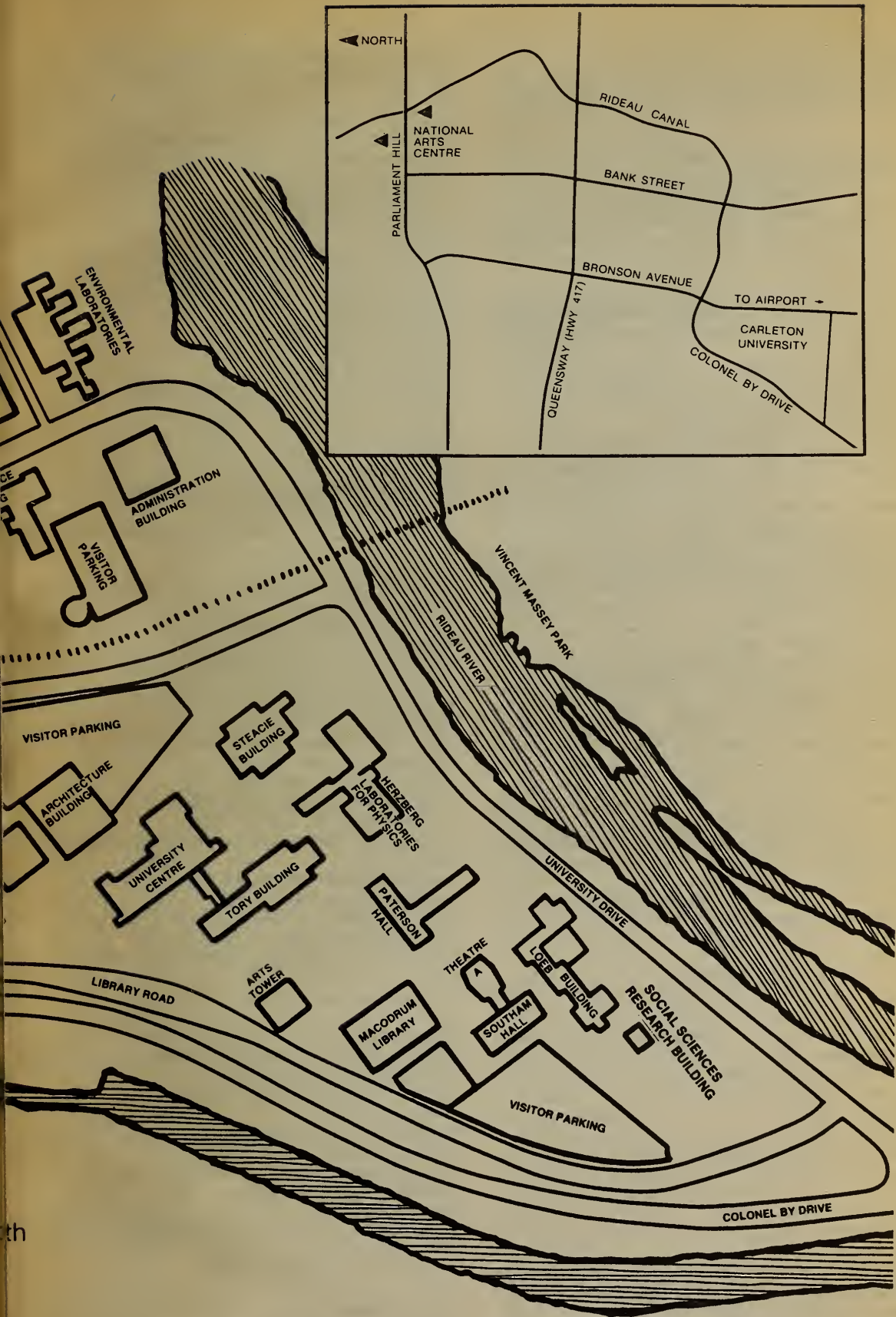
This lecture series was established in 1981 by the Technology, Society and Environment Committee and the Faculty of Arts. The purpose of the annual lecture is to sensitize the public to the impact of technology on society and the environment.

## **The Philip E. Uren Memorial Lecture**

The Philip E. Uren Memorial Lecture is sponsored by the Dean of the Faculty of Social Sciences in memory of Philip Uren, former Director of the Institute of Soviet and East European Studies, the Norman Paterson School of International Affairs, and the Paterson Centre for International Programs at Carleton University. This annual lecture was established in 1982.







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ISBN 0-7709-0185-9

Published by the Office of Admissions  
Carleton University  
Keith Alnwick

Editor:  
Ann Semple

Typesetting and Art Work:  
Carleton University Graphic Services

Printing:  
Tri-Graphic Printing (Ottawa) Ltd.

1986

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"We must never forget  
that the trained intelligence  
of a nation  
is its greatest asset,  
greater than any  
material resource."

Henry Marshall Tory  
Message from the President  
First Annual Carleton College Yearbook, 1942-43